



California Health eQuality (CHeQ)

HIO Development Guide

December, 2012

*This document, drafted
by Lyman Dennis and IPHI staff, was developed with funding from
the California Health and Human Services Agency's
State HIE Cooperative Agreement (ARRA)
with the U.S. Department of Health and Human Services*

Contents

1 Executive Summary.....	1
2 Introduction.....	4
3 Stakeholder Engagement.....	6
4 Community Needs Assessment.....	10
5 Organization and Governance.....	15
6 Lay Summary of Exchange	19
7 Exchange Services and Interfaces	24
8 Business Plan and Budget	30
9 Participation Agreement and DURSA	35
10 Privacy and Security.....	40
11 Determine Funding Approach.....	46
12 Select an HIE Service Provider	49
13 Develop Final Budget.....	53
14 Obtain Participation Agreements.....	54
15 Implement Exchange.....	55
16 Conclusions.....	57
Appendix A - Charter for an Exchange.....	59
Appendix B – MOU	61
Appendix C – Form for Hospital System Data.....	63
Appendix D – Form for Medical Practice Data	67
Appendix E – Agreement with Incubating Entity.....	71
Appendix F - Technical Summary of Exchange	74
Appendix G – Query Data Exchange Models.....	77
Appendix H – Workplan/Schedule.....	82
Appendix I – Budget Examples	83
Appendix J – Partial RFP/RFI.....	85

Figures

<i>Figure 8.1 Sample Workplan/Schedule</i>	<i>33</i>
--------------------------------------------------	-----------

Tables

<i>Table 4.1 Status of Exchange.....</i>	<i>13</i>
<i>Table 5.1 Permanent Hosting by an Existing Organization as a Line of Business.....</i>	<i>15</i>
<i>Table 5.2 Developing a Separate Corporation</i>	<i>15</i>
<i>Table 5.3 For-Profit Entity.....</i>	<i>16</i>
<i>Table 5.4 Not-for-Profit Entity</i>	<i>16</i>
<i>Table 6.1 Federated Model: Data at Providers' Data Center.....</i>	<i>21</i>
<i>Table 6.2 Federated Model: Data at the Exchange</i>	<i>21</i>
<i>Table 6.3 Repository Model.....</i>	<i>21</i>
<i>Table 8.1 HIMSS Analytics EMR Adoption Model</i>	<i>31</i>
<i>Table 8.2 Cost by Organization Type</i>	<i>33</i>
<i>Table 8.3 HIE Charges to Hospitals Based on Numbers of Beds</i>	<i>34</i>
<i>Table 9.1 Markle Policy and Technical Guides.....</i>	<i>38</i>
<i>Table 9.2 Markle Model Privacy Policies</i>	<i>38</i>
<i>Table 9.3 CurrentCare, Rhode Island Quality Institute Policies & Procedures</i>	<i>39</i>
<i>Table 10.1 Privacy Rights Clearinghouse: California Medical Privacy Series</i>	<i>44</i>
<i>Table 11.1 Dues Structure.....</i>	<i>46</i>

1 Executive Summary

This HIO Development Guide is designed to provide the leaders of emerging Health Information Exchange (HIE) initiatives with the experience of others – those who began with a vision and developed an operational health data exchange. In this document, we use the term Health Information Organization (HIO) to mean an entity that organizes and governs the exchange of health information for a specific set of participants. An HIO typically also provides exchange services to its participants by (1) contracting with a vendor of HIE services or (2) contracting with another HIO to share its services or (3) building all the services itself. The focus of this document will be on options (1) and (2) because the time has passed when the third, more expensive, option is necessary.

The development of HIO services within a service area involves a sequence of functions:

- **Stakeholder Engagement.** The first step is to bring a nucleus of community stakeholders to an initial meeting and provide enough information about HIE so that attendees are interested in learning more. A compelling case can be made that (1) EHR Meaningful Use incentives require exchange, (2) quality and cost are more favorable in paperless systems, (3) connecting all providers one-to-one is not feasible because of the number of connections needed, and (4) patients prefer provider systems that can access all their healthcare data, provide patients electronic access and allow email access to providers. We suggest a series of meetings and steps to mobilize the relevant community leaders. This is not academic. This approach has been used and works.
- **Community HIE Needs Assessment.** This has two elements: (1) a demographic/environmental scan and (2) an assessment of current and planned community data exchange. A community-based program to share healthcare data must be based on a solid understanding of community needs, beginning with the character of the population, demographics, income, employment, and provider distribution. Some of these data may be available in community plans of departments of health and social services and in hospital strategic plans, if the demographic and environmental studies from those are sharable. The developer of HIO services needs to know the relationships between provider organizations in the community, the current and planned information systems for each provider, and the current and planned exchange.
- **Organization and Governance.** As the stakeholders become more engaged, the exchange enthusiasts will identify themselves and the organizer will wish to involve these clinical and technical leaders. The organizer and these leaders will determine if there is an existing organization that can be the home for HIO or if a new entity should be formed. The decision will be implemented and a board or governing council will be formed.

- **Lay Summary of Exchange.** There are two modalities of data exchange: (1) results delivery and (2) query for patient data. Query data exchange utilizes a master person index and a record locator service. Both results delivery and query models use integration engines. This section provides an overview of these features in lay language.
- **Exchange Services and Interfaces.** The base services an HIO will want to consider are listed as well as other services that can be provided for additional revenue, so-called “value-added services.” HIO user interfaces are reviewed as are recent changes in technology.
- **Business Plan and Budget.** An HIO is a business and it is important that it be developed to be sustainable. Some promising HIOs have been lost and we don’t want to add to that list. It is not possible to develop a definitive budget prior to selecting a technical vendor or HIO, but reasonable cost estimates can be made. The participating provider organizations can be asked to budget for a recommended amount. Provider organizations that budget for exchange are more likely to contract for HIO services when the preparations are complete.
- **Participation Agreement, DURSA, and California Model Modular Participation Agreement (MMPA).** The first two are the agreements that providers will sign, respectively, for exchange within the community and through the Healthway eHealth Exchange, formerly known as the Nationwide Health Information Network (NwHIN). The MMPA has been released by CalOHII as a model for both an HIO’s Participation Agreement, and a model HIE-to-HIE data sharing agreement. The MMPA is compliant with national and state law.
- **Privacy and Security.** Privacy and security of individually identifiable health information are governed primarily by HIPAA but are modified by American Recovery and Reinvestment Act/HITECH and other legislation and regulation. The HIO will make decisions about its privacy standards and develop a model notice of privacy practices to communicate those decisions.
- **Funding Approach.** The HIO will develop a plan for initial funding, infrastructure funding, interfaces and a price list for the services it will offer to providers.
- **Contract with an HIE Service Provider .** In this document, we call a contracted vendor or another HIO an “HIE Service Provider.” The forming HIO’s choice of an HIE service provider will have a significant bearing on the probability of success. This is a long-term relationship that is part team-building and part buying a product/service.
- **Final Budget.** Once the agreement with the vendor or HIO partner is executed, the detailed budget can be completed and pricing information will be available for the cost section of the participation agreement. By this time, most of the participating providers will have executed a participation agreement based on a projected budget so there will be a budget differential to be resolved, hopefully large and positive for the HIO.

- **Participant Agreement.** As noted above, solicitation of executed participation agreements will begin about six months in advance of the projected date of signing the HIE service provider agreement. This initial contracting will benefit from a keen sense of those providers who want to be first movers. When they have signed, the next group will be more likely to sign promptly. In this document, we refer to users of the HIO as “providers.” One particular type of provider in some service areas is a Medi-Cal managed care program which supplies services through contracted clinical staff.
- **Implementing Exchange.** At the point of implementation, the HIO will work with the HIE service provider to configure for a phase 1 implementation in a subregion of the service area. At the end of the initial phase, other groups of providers will be added and the HIO will be live and in production for its full service area.

This document takes the reader from the start of the HIO-consideration process to the point at which implementation is underway. We trust that the HIO organizer will find this useful. Please contact us with any comments to improve the document.

2 Introduction

What's in this section?

- 2.1 How to Use this Document.** These are the steps to build an HIO.
- 2.2 Elements of Exchange.** The overarching steps in developing health exchange.
- 2.3 Terminology of Exchange.** Why do we use the term “HIO”?

2.1 How to Use this Document

This document presents the steps to get a health information organization (HIO) up and running. The material is presented in the order of the necessary steps. Later in this document, we present a section on business plan and budget about the finances of an HIO. This entire document addresses the elements of a full strategy for an HIO business, which some may choose to include in their business plan.

2.2 Elements of Exchange

The formation of a community entity for health data exchange is accomplished in five macro steps:

1. Community engagement
2. Entity formation
3. Technology selection
4. Initial operation
5. Growth

The chapters that compose this guide fit within this structure, not neatly as blocks but across the first four major divisions. We do not deal with the growth phase in this document.

2.3 Terminology of Exchange

As stated above, we use the term “health information organization” or “HIO” to mean an entity that organizes and governs health information exchange “HIE” for a specific set of participants. HIOs typically also provide exchange services to their participants. Literature in the field sometimes uses the terms “health information exchange (HIE)” or “regional health information organization (RHIO)” for this. Our use of “HIO” overlaps with these terms, but we assume that HIOs today have a wider range of options available to them for organizing and providing HIE services to their participants. This guide focuses on the development of community HIOs which include participants from unaffiliated or competing provider organizations within a medical service area, and not proprietary enterprise HIE infrastructure developed within integrated health and hospital systems.

We will use the term “HIE” often, but restrict its meaning to the function of health data exchange (the verb/adjective).

The term “HIE service provider” denotes any entity offering technical services enabling HIE with which an HIO may choose to contract, including technology vendors, consultants managing or integrating multiple vendors, or existing HIOs offering their services outside their governance domain.

“Provider” denotes any organizational user of an HIO. One important user in many service areas that does not fit this designation are Medi-Cal managed care programs. Such programs supply care to 50% of all Medi-Cal beneficiaries at a cost of 18% of the Medi-Cal budget, partially because seniors and the disabled have been in fee-for-service Medi-Cal.¹ Medi-Cal managed care programs are becoming more important with the expansion of managed care membership. Because most organizations participating in HIOs are providers (direct contracts or through managed care entities), we will continue to use the term ‘providers’ to mean ‘HIO contracted clinicians.’”

¹ California Health Care Foundation, California Health Care Almanac: Medi-Cal Facts and Figures, September 2009, p. 28.

3 Stakeholder Engagement

What's in this section?

- 3.1 **Vision.** Communicate the purpose and values of the HIO.
- 3.2 **Convening the Community.** Begin to organize the community.
- 3.3 **Coordinating Committee.** Build the eventual governing body of the HIO.
- 3.4 **Personal Meetings with Leaders.** Begin to engage provider organizations.
- 3.5 **Commit Leaders and Collect Funds.** Use an MOU to build commitment and get initial funds.
- 3.6 **Involve Early Adopters as Leaders.** Ask those enthused to begin leading in meetings.
- 3.7 **Reluctant Leaders.** Continue to communicate. Be deaf to “no.”
- 3.8 **Holdouts.** Don't let them slow the process.

3.1 Vision

The most critical step for developing an HIO is a strongly held stakeholder vision that exchange will improve healthcare access, delivery, and outcomes, and that these improvements are important. Often an individual has witnessed this metamorphosis in other communities and sees the potential in their own. They see that current paper and fax information sharing among healthcare providers is primitive and that clinical and administrative data should be shared electronically. Not only does this person have the vision, but they have the motivation and drive to make HIE happen in their community. They know it's not a smooth road, but the consequences of it not happening are far worse than the trials they may face. We call this person or group the “organizer.” The vision of one HIO is provided in [Appendix A](#).

3.2 Convening the Community

If the organizer is from the community being organized, s/he/they will know the community and be able to assemble a list of leaders from each organization likely to be initially involved in health information exchange (HIE). If the organizer is not from the community, they must find a local champion to guide them through local politics. Here starts the engagement process.

Community Meetings

There are different ways of engaging a community. One proven method is hosting a provider meeting bringing together key constituents to share information, discuss the status of exchange in their organizations, and allow them to talk about the challenges they currently face. Community meetings allow people to find common ground and start thinking of group solutions. They can help to break down silos and institute connections. Community meetings require time commitments from attendees which can be your first inclination of how interested or disinterested the community is in exchange. The right meetings can create a buzz in the community and accelerate the move towards community exchange.

Assuring Turnout for the First Meeting

Getting people to turn out for a new initiative can be challenging. Pick a time that is convenient for attendees. Often evening meetings work well with people's schedules. A distinguished speaker and food are both good draws. Outreach for this meeting via email and word of mouth is key, and it is always good to request RSVPs to garner commitment from participants. Choose a location that is convenient. Hospitals and health plans provide good venues as the locations are known and they are typically willing to provide a light meal. Your initial speaker should be someone who believes in HIE and has had success with it. It is beneficial to seed the crowd and invite leaders of organizations you know are involved in exchange or planning for it. Ask each of them to speak for 2-3 minutes about what they are doing with respect to exchange (see Section 3.6).

Meeting

Start by going around the table for introductions and ask each participant to indicate her or his interest in exchange. We suggest doing this for every meeting. As the meeting participants become more knowledgeable (from the meetings and an enhanced awareness of HIE), they become more supportive of exchange.

Present the program (speaker(s), objectives of planning for HIE) and near the end of the meeting ask for several volunteers to help prepare for the next Community Meeting. If there are no volunteers, ask several people who have asked good questions or whom you know to be community IT or healthcare leaders if they will assist. These individuals become the core of the Coordinating Committee. Ask attendees to agree on when and where the next meeting will be held. These small steps of commitment start the process of getting people invested in the project.

3.3 Coordinating Committee

The Coordinating Committee is the center of the new HIO development effort. We suggest planning two meetings or conference calls of the Coordinating Committee between each of the Community Meetings. Ask members of the Coordinating Committee to research aspects of HIE for the next Community Meeting and then ask them to present what they found. A volunteer HIE subject matter expert will also be useful. The organizer, the subject matter expert or someone they bring in can steer the volunteers so that they avoid any serious errors in their presentations and channel each presentation to a productive conclusion. The audience should understand the potential of exchange and, over a series of presentations, that exchange is critical to improved healthcare in the community.

3.4 Personal Meetings with Leaders at Each Organization

Another way to engage stakeholders is through one-on-one meetings. These can occur soon after the first or second community meeting. Take some time to research each organization prior to your one-on-one. Hopefully these meetings will engage the stakeholders and many of these individuals should eventually become members of the board of your HIO. As momentum grows for exchange, the organizer often becomes a more trusted team member or even an advisor.

3.5 Strategy to Involve Leaders and Collect Modest Funds

As interest and commitment grows, the organizer must determine the right time to ask for memoranda of understanding (MOUs) indicating an agreement in principle to work together toward a community HIO. The MOU will have provisions like those in [Appendix B](#): (1) We intend to work together toward exchange. (2) We agree to pay annual dues according to a schedule. (3) The MOU can be used in an application for a grant. Using the tried and true experiences of other communities is a good way to broach this subject and demonstrate that an MOU and dues are important to the process.

Once there is initial agreement to the MOU, the organizer(s) can publicize the MOU and ask all participants to consider and sign it. As the process matures, the Coordinating Committee will be augmented to have a representative from each core organization in the HIO. The organizer either uses personal knowledge or that of a valued representative of the local hospital council or medical society to focus on the needed additions to the Coordinating Committee. Ideally, the representatives from each organization should be able to commit the organization or have direct access to their CEO or board. The size of the Coordinating Committee is related to eventual board size, but more flexible. Many with governance experience believe that smaller boards are more effective (See Section 5.4.)

The Coordinating Committee needs to build toward having representation from all key (large, influential) organizations in the community. If this means that the Coordinating Committee is quite large, then the organizers need to determine how to have some groups represented by a single board member. If the HIO is successful, there will be many community organizations to be represented on the board. Well-managed organizations develop a way to represent constituents effectively within board size limitations using criteria such as geography, organization type (hospital, medical organization, health and social services agency, etc.), and roles of the board members (CEO, CIO, RN, etc.).

3.6 Involve Early Adopters in Community Meetings

Some of your members, especially from hospital systems, may be far along with enterprise health data exchange (within their integrated delivery systems). Ask them to present at least briefly at Community Meetings. This recognizes their leadership and lets them know that their achievement is highly regarded. Most integrated systems strive to attract patients not in their systems as referrals. Exchange is needed for these patients, for patients who move in and out of integrated systems, and for referrals and transfers within the community. The point here is that systems and organizations are exchanging health information, but it is so early in the community HIE process that the main competition is not enterprise HIEs but is “not exchanging data at all.”

3.7 Communicate with Leaders Reluctant to Participate

One of the rules of selling is don't hear the first three “nos.” You can expect many providers, provider leaders and others to start by saying that they are not interested in exchange. Many leaders don't have a real sense of what exchange is about and they are very busy. What should you do about these people?

1. Keep them on the Community Meeting email list and send them notes from each Community Meeting.

2. Periodically offer to meet with them personally to explain more about HIE and what the project is attempting to do. We recommend developing a short statement of the intent of the participants which we term the “charter.” Send them the charter document (sample in [Appendix A](#)) and the list of committed participants.
3. Some may decide that they are not going to participate initially because of competing priorities. At some point you will have an opportunity to say, “Some 80% of providers in the community are participating. Your XYZ hospital system is a leader in the community now. If 80% of the hospitals in the community are going to make this work, you risk losing some market share if you wait a year.” There is good data showing that patients prefer getting lab results online, emailing their physicians, and having most of their medical data available to their providers. Nonparticipating providers risk losing market share.
4. If they decide not to participate for some period of time, ask the person to be an advisor to the HIO project. This keeps them close so they can see things evolve and lets you have the benefit of their vision and expertise. As they see the community taking intelligent steps they are likely to desire to join.

3.8 Don’t Let Holdouts Slow the Process

The author once joined and then ran a project in a major California market area. The goal was for 18 hospitals to identify several business ventures that they could undertake jointly. There was one interesting provision of the governance arrangement: All 18 hospitals had to agree on any business selected. The project report outlined 60+ businesses, a number of which had support from many of the hospitals. But, there was no one business to which all hospitals agreed.

The point is that all those who come to the exchange table initially will not necessarily be there for an HIO. One may be there because exchange is not perceived to be an advantage for some reason. If you allow any one provider to nix any function, that gives that provider the ability to scuttle the project. No one should have veto power. Exchange will happen with or without any handful of providers, even some big ones.

4 Community Needs Assessment

What's in this section?

- 4.1 **Determine Exchange Service Area.** What area should the HIO serve?
- 4.2 **Existing Community Studies.** Seek and obtain existing studies.
- 4.3 **Population.** Determine population by subareas.
- 4.4 **Employment.** What is the employment /unemployment situation?
- 4.5 **Income.** What is income distribution in the community?
- 4.6 **Provider Distribution.** What are the provider statistics: hospitals, PCPs, specialists, community clinics, etc.
- 4.7 **Relationships Among Providers.** How are provider organizations related?
- 4.8 **Systems Used by Providers.** What IT/EHR systems are used and planned?
- 4.9 **Current Health Data Exchange.** What data is currently being exchanged?
- 4.10 **Plans for Exchange.** What are plans for health data exchange?

4.1 Determine Exchange Service Area

One of the underlying concepts of community data exchange is that “healthcare is local.” It is one thing for the heads of a number of healthcare organizations to sit down across a table in a community and determine how data may be exchanged. It is another to have an industrial giant the providers do not know come in and offer to make an HIO happen. In the first instance, the participants are already known to one another. Some are competitors but they sit on various community boards and take actions to support the safety net, deal with the need for emergency services and ambulance service, and work through many community issues. Exchange, like healthcare, is local.

An early question in setting up a project for HIO is, “What should the service area be?” Sometimes, this is determined by providers who have decided they would like to work together. In geographies where one county runs into the next, an important question is, “What are the referral patterns?” The providers in a community will know which specialists they use and which hospitals are the referral hospitals for the community, but it is not always clear on a community basis.

The Dartmouth Atlas

The Dartmouth Atlas of Health Care is a useful tool for determining Medicare referral patterns.² The Atlas is a web-based tool indicating referral patterns by sub-region for two types of Medicare patients. One can use the Atlas for referral information by going to <http://www.dartmouthatlas.org/data/region/> and entering cities, towns or zip codes in the “Search Regions” box. This will return the referral region that applies for that city, town or zip code. You can then click on that region for a map of the referral (to) region. The Atlas provides statistical data for the referral (to) region as well. The maps produced

²The data used by the Dartmouth Atlas reflect the treatment of Medicare patients with serious chronic illnesses who were in their last two years of life. The Dartmouth Atlas study was limited to hospitals with large enough populations to result in statistical stability and retain the confidentiality of patient information.
<http://www.dartmouthatlas.org/data/hospital/?loc=113>.

are poor but by comparing them to a county map, one can determine what counties are in what referral regions. One tricky feature is that the Atlas cuts across counties. The best approach is to use links on the map to show zip codes and hospitals in the referral region. Those can be used to color a separate map with good referral information.

A map of the referral areas provides some data that will be of value. Blind adherence to the maps is not recommended as there are payers besides Medicare. In 2008, there were 4.5 million Medicare beneficiaries³ in California, out of 38 million total population (2012).⁴ The Atlas uses Medicare data because it is available, not because it is ideal.

4.2 Existing Community Studies

A number of organizations in the community regularly study referral patterns, demographics, emergency department use and other care delivery factors. Every hospital system will have excellent reports on this because this information governs their strategic planning and they may release the demographics and community characteristics portions. Departments of Health and Social Services typically produce sound reports on demographics and service use for their service areas. Some community organizations may conduct or contract for studies to deal with specific issues.

4.3 Population

Population of a service area gives substantial information. We recommend gathering at least population by county and service area and Medi-Cal beneficiaries by the same areas. The analysis should include determination of health professional shortage areas and medically underserved areas.⁵ The HIO should determine what Indian tribes are represented in the service area and ask that they participate.

4.4 Employment

The degree of employment and lack thereof can have a bearing on the service area and is of distinct interest. A map is suggested.

4.5 Income

Income levels of populations is similarly of interest and should be determined and mapped.

4.6 Provider Distribution

The Dartmouth Atlas analysis will list hospitals in the service area by referral region. The analysis for the business plan should include a table of all providers of various types. The basics are: hospitals by city or county and beds plus ED visits, departments of health and social services in each county, community clinics and a summary of primary care physicians and specialists by city or county and totals.

The remaining topics of this Community Needs Assessment section address current and planned electronic data exchange. The goal of this step is to assure that the organizer and Coordinating

³Rand Corporation, California HealthCare Foundation, Medicare Facts and Figures, January 2010.

⁴California Department of Finance, News Release and Population Report, May 1, 2012 and <http://www.dof.ca.gov/research/demographic/>.

⁵See <http://www.oshpd.ca.gov/HPEF/MUAs.html>.

Committee understand IT relationships in the community and the health data exchange going on and planned. This knowledge is crucial to developing the workplan for the planned HIO entity so that it compliments existing planned activity.

4.7 Determine Relationships Among Provider Organizations

We all think that we know how healthcare organizations are related in our community. But, there will be surprises. It is important to know ownership links and IT service arrangements so the project knows who makes what decisions.

Current Relationships

The majority of the healthcare organization relationships will be well-known and stable but some will be a surprise and changing. Though it sounds pro forma, you want to be sure that you know the territory.

Planned Changes in Relationships

Planned changes will be both visible and clandestine. For example, some organizations may have announced that they are building an Accountable Care Organization and who their partners will be. Others may be working on strategies that are not yet announced. One-on-one meetings with the leadership of the participating organizations will help ferret some of this out, but some plans will be embargoed until an announcement is made.

4.8 Determine Systems Used by Providers

As the HIE maven for the community, the organizer wants to be sure s/he knows what systems are in use by potential participants. There are two parts to this.

Current Systems

Each candidate organization for participation in the HIE will have an array of systems. You don't need to know them all but you want to know about the clinical and administrative systems that might have data to be shared. We have provided forms in the [Appendix C](#) and [Appendix D](#) for inventory of hospital and medical practice systems, respectively. In addition to the electronic health record (EHR), the hospital systems of interest will include the hospital information system (HIS) and its admission, discharge and transfer (ADT) data feed, the laboratory information system (LIS), the radiology information system (RIS) and the picture archiving and communication system (PACS). For medical practices, the key systems will be the EHR and the practice management system (PMS).

Planned System Changes

Nothing in healthcare is a fluid as information systems. There are sure to be additional systems on order and potential changes to what each organization has reported. You will want to ask periodically about changes.

4.9 Document Current Exchange

Participant and candidate organizations will normally be involved in some types of data exchange. Many will receive laboratory results from Quest, LabCorp and/or hospital, independent, reference and specialty laboratories. Others may have an exchange development program underway to meet meaningful use requirements: lab results, ePrescribing (probably through their EHR), sharing patient

care summaries (discharges, referrals, transfers of care) and public health reporting (immunizations, reportable lab results, and syndromic surveillance). More advanced organizations may be addressing a range of HIE plans including a clinical data repository and many other functions. See [Section 7.1](#) for a list of potential services.

Existing exchange will fall in two categories: community exchange and enterprise exchange. The best example of enterprise exchange is Kaiser Permanente in California. Kaiser has its core Epic system but it has different implementations in different regions (Northern California, Southern California) and they exchange data. All the Kaiser effort to date has been on enhancements to its EHRs, internal exchange and some exchange using the Healthway eHealth Exchange (formerly called the “Nationwide Health Information Network” or “NwHIN”) with the Veterans Administration, the Department of Defense, the Care Connectivity Consortium (Mayo Clinic, Group Health Cooperative, Intermountain Healthcare and Geisinger Health System), and others. Kaiser leaders indicate that clinical data exchange with communities will be only through the eHealth Exchange.⁶

Examples of other enterprise HIOs with substantial efforts include Adventist Health, St. Joseph Health System and Dignity Health (formerly Catholic Healthcare West). There are some 14 enterprise HIOs in California.⁷ These HIOs have strong internal HIE programs but much of the market share of each is from patients not drawn from health system providers. This means that these organizations need exchange across their communities.

The current status of exchange needs to be measured across other participants:⁸

Table 4.1 Status of Exchange

Percent	Transaction Type
	Pharmacies accepting electronic prescribing and refill requests
	Clinical laboratories sending results electronically
	Health plans supporting electronic eligibility and claims transactions
	Health departments receiving immunizations, syndromic surveillance and notifiable laboratory results

It may be possible to get some data in more fine-grained measures, such as approximate percentages of prescriptions at a pharmacy filled electronically, percentage of lab results delivered electronically, etc. See Table 4.1 above.

⁶John Mattison, Chief Medical Information Officer, Kaiser Permanente, at Redwood MedNet Annual Conference, July 19, 2012.

⁷Mark Elson, The Adaptive Path of HIO Development, Redwood MedNet Connecting California to Improve Patient Care, July 19, 2012, http://www.redwoodmednet.org/projects/events/20120719/rwmn_20120719_elson.pdf.

⁸DHHS, ONC, Program Information Notice: ONC-HIE-PIN-001, p.7.

4.10 Determine Plans for Exchange Development

The larger participating and candidate organizations will also have strategic plans for information sharing. They may have ACO plans, affiliation plans, medical care foundation plans, acquisition of surgical centers, etc. Whether these plans include HIE, they are likely to depend upon exchange to be efficient. So, these organizations may be “planning” for exchange even if they don’t use the word.

5 Organization and Governance

What's in this section?

- 5.1 Organization Entity Options.** What entity type is available, desired?
- 5.2 Incubating Entity.** What organization will best serve?
- 5.3 Corporate Formation.** How difficult is this?
- 5.4 Governance Structure.** What works and maintains stability?

The success of the HIO effort turns on the effectiveness of the governing entity. It is not particularly complicated to select good people to participate in the group that begins as the Coordinating Committee and, eventually, becomes the board (if an independent legal entity will host the HIO), and to make responsible decisions. There are, however, many potential pitfalls along the way. This section describes one approach that the author has used successfully in several communities.

5.1 Organizational Entity Options

You as the organizer with the Coordinating Committee have decided to form an HIO entity. One of the first decisions is in what kind of entity should the HIO reside? An existing community organization may be a good choice. See Table 5.1. Some exchanges have grown out of or in a medical society. This is a great location as it gives physicians some ownership and they are less likely to be threatened by hospital system participation if they provide the venue for the entity. The entity might start as a line of business of the medical society and, in due course, spin off as a separate entity (Table 5.2) or it might remain in the host entity.

Table 5.1 Permanent Hosting by an Existing Organization as a Line of Business

Pros	Cons
<ul style="list-style-type: none">• Avoids need to form a corporation• Existing organization has all needed corporate structure, tax arrangements, etc.• Faster	<ul style="list-style-type: none">• Role of host company may not be compatible• Management of host company may interfere• Image of exchange may not be pure because of other functions of host company

Table 5.2 Developing a Separate Corporation

Pros	Cons
<ul style="list-style-type: none">• Conspicuously a health data exchange – the only business• Management is independent and pursues only the HIO goals• Opportunity to position new organization as a neutral entity	<ul style="list-style-type: none">• May need to arrange for an organization to serve as incubator until the organization has some heft• Leadership must go through the process of corporate formation and a number of steps related to being an independent business

If there is not an existing organization that is suitable, the HIO entity can determine if it desires to be a for-profit (Table 5.3) or a not-for-profit corporation (Table 5.4). You will find if you speak with leaders of HIEs that, if they were doing it again, almost all would set up the organization as not-for-profit because that increases the opportunity for grants. We recommend the not-for-profit route as well.

Table 5.3 For-Profit Entity

Pros	Cons
<ul style="list-style-type: none">• Typically the board is selected by management and is less involved than a not-for-profit community board• Can make decisions faster and execute faster• If exchange is valuable to the underlying business (e.g., an IPA), there may be strong incentives to make HIO function promptly and well	<ul style="list-style-type: none">• Decisions may benefit the community but also the for-profit entity, potentially damaging its reputation as a neutral organization• Certain types of grant funding are not available

Table 5.4 Not-for-Profit Entity

Pros	Cons
<ul style="list-style-type: none">• Certain types of grant funding are available• Decisions are most likely to benefit the community• Less likelihood of perceived conflicts of interest	<ul style="list-style-type: none">• Typically the board is more involved with the business• Makes decisions less rapidly than a for-profit

5.2 Incubating Entity

The organizations in the Coordinating Committee have agreed to sign an MOU and pay initial dues. They are leaders in healthcare organizations with sophisticated financial officers. They are going to want to pay the dues to a responsible entity, not to an as-yet unformed (not incorporated) exchange that can't get a Tax ID (TIN) without paperwork from the Secretary of State. The best way to deal with this and to show that the HIO effort has some legs in the community is to ask a respected not-for-profit, a 501(c)(3) is best, to "incubate" the HIO. This will allow the HIO to apply for grants immediately as a not-for-profit and, more importantly, will provide some heft and the imprimatur of respectability because a known not-for-profit has agreed to take responsibility for the organization until it is incorporated and gets its own 501(c)(3) status. (A for-profit organization could incubate the HIO if for-profit is the chosen model.)

A sample agreement with an incubating entity is attached in [Appendix E](#). The key provisions are –

1. Allows the HIO entity to utilize the incubation entity not-for-profit status.
2. The incubation entity will provide fiscal services until the HIO entity receives its 501(c)(3) status. Technically, the HIO entity only needs incubation until the articles of incorporation are approved by the Secretary of State but the longer term of the fiscal services assures that participating organizations know that their contributed funds are safe for some period of time and in a not-for-profit. (See "[Filing for Not-for-Profit Status](#)" below.)

5.3 Corporate Formation

Forming a Corporation

Forming a corporation is a simple process. An attorney can form the corporation for a small fee or the organizer can use a kit to do this.⁹ The legal costs are appreciable if the attorney prepares the bylaws and the application for nonprofit status. Using an attorney is recommended if your organization can afford it. Using the kit takes time, but, when you are through, you know all the provisions of the law that apply and you have made the key decisions based on that knowledge. If an attorney prepares your documents (articles of incorporation, bylaws and application for 501(c)(3) status), the attorney is likely to make some decisions without your ever understanding the issues.

Not-for-Profit Status

There are two potential applications for not-for-profit status: state and federal. The NOLO book referenced above recommends skipping the state application and just filing the federal application. The state application is simpler but is still lengthy. The federal application takes a minimum of 6 months for processing if it is completely clean (few are) but it satisfies both the IRS and the state. The down side of this approach is that the organization will need to pay the \$800 minimum state tax for its first year but will receive it back when the not-for-profit status is achieved and submitted to the state.

5.4 Determine Governance Structure

How one structures a corporation has a major effect on whether it can be effectively governed. Here are some key decisions you need to make and why each is important. In the sections which follow, we discuss “boards of directors.” If your HIO is a line-of-business of another organization, the exchange may not have a board of directors but will have what we will call a “governing council.” The governing council reports to the board of directors on paper but, in practice, because the HIO is quite different from, say, a medical society, the governing council will have a medical society representative but will generally function as an independent board.

Board Size

Board size matters because a relatively small group of intelligent, thoughtful people can reliably reach sound decisions on issues in a reasonable amount of time. When boards are larger than about 15 members, there is not time for every member to weigh in on an issue, which leads to frustration and dissatisfaction. We have all seen board meetings and/or webinars where a well-intentioned but somewhat uninformed person hijacks the meeting with a tangential or irrelevant subject. This does not fit into a model for an effective board. In our opinion, the board size should be no more than 15. There are ways to represent more stakeholders on a board by having matrix representation by stakeholder type, geography, role, and, potentially, other factors. This is the recommended approach to avoid having a larger board.

⁹One acceptable kit is from NOLO Press, Attorney Anthony Mancuso, *How to Form a Nonprofit Corporation in California*, 14th Edition, May 2011.

Corporation Type

There are two types of nonprofit organizations in California, membership nonprofits and nonmembership corporations. In a nonmembership corporation, the board of directors makes major corporate decisions. In a membership corporation, California nonprofit law gives members the right to participate in major corporate decisions. Most smaller nonprofits use the nonmember structure because operation is substantially simpler.¹⁰

Board Selection and Succession

The initial board of directors (all of whom have signed MOUs and been billed for dues) is appointed by the organizer and can include himself/herself. After the initial board is seated, the organizer resigns as organizer. The initial board is typically appointed with different terms. One approach is to appoint all directors without terms and then use a random process to select terms of 1, 2 or 3 years. Thereafter, we recommend that a nominating committee select one individual to replace any board member who will not seek reelection to the board. In an HIO, the board seats belong to the represented organization or group of organizations if several organizations together have a seat, not to the individual representatives. A person who leaves an organization is replaced by another individual nominated by that organization. If a matrix approach is being used where several characteristics of the board member were considered, a committee of the board should consider how to use the opportunity to best enhance representation.

¹⁰ Attorney Anthony Mancuso, *How to Form a Nonprofit Corporation in California*, p. 42.

6 Lay Summary of Exchange

What's in this section?

- 6.1 **Results Delivery vs. Query.** The modalities of data exchange.
- 6.2 **Technology of Query Data Exchange.** These are the Master Patient Index and the Record Locator Service.
- 6.3 **Integration Engine.** What if the order or coding of transaction data elements is not what my system requires?
- 6.4 **Models of Query Data Exchange.** There are three in concept and two in use.
- 6.5 **Use Exchange System Components?** Can I assemble my own HIO system?
- 6.6 **Healthway eHealth Exchange and Direct.** About the federal systems.

It would be feasible to write a thick book about the topic of data exchange. What we will do here is focus on what you need to know about exchange to get going. THIS SECTION IS LARGELY NONTECHNICAL so don't become worried and skip this section. A somewhat more detailed summary appears in [Appendix F](#).

6.1 Results Delivery vs Query

Health information exchange has evolved on two parallel paths. The first is called results delivery or clinical messaging. This mode of transport pushes data from one location to another. The typical example is the sending of lab results from a lab system to the placer of the lab order. The second path envisions a central hub that a provider organization can query to obtain data about a patient who may have been seen by a number of other providers. In the Section 6.5 discussion of Healthway eHealth Exchange and Direct, Direct supports the push messaging approach, and the eHealth Exchange supports the query approach.

6.2 Technology of Query Data Exchange

Certain tools are intrinsically associated with query data exchange: the master person index and the record locator service.

6.2.1 Master Patient Index

Your community serves a number of individuals with the same or similar names which are sometimes mis-spelled, patients marry and are divorced with name changes, etc. It is important that the HIO be able to determine which medical data belongs to which patients. A master patient index or "MPI" is a tool which takes various fields of data about a patient and matches them against those of patients with similar names, date of birth, gender, telephone, address, and potentially a few other factors and

determines which records match which patients. Manual intervention may be required for those persons not initially matched by the MPI.¹¹

6.2.2 Record Locator Service

The record locator service contacts the available directories, identifies the locations of records for the current patient and provides that information to the exchange so that it can retrieve the relevant records.

6.3 Integration Engine

This is a tool variously called an integration engine, an interface engine or a translator. A number of vendors supply these tools and there is at least one open-source, widely used version downloadable from Mirth Corporation at <http://www.mirthcorp.com/products/mirth-connect>. The basic function of the interface engine is to accept a transaction in a certain format, remap (resequence fields) and often translate certain fields to different coding schemes, and produce an output record that can be read by the receiving system.

6.4 Models of Query Data Exchange

One of the first worries of providers new to exchange is, “I have to give up my data” or “I will lose control of my data.” The answers are “no” and “no,” with a few caveats. First, let’s ignore the fact that the data is not the providers’ possession; the data belongs to the patient. Second, query-based health data exchanges are of three models. One involves pooling of data and the other two do not. Let’s look at the models. What follows is simplified. A more detailed version of this Section is provided in [Appendix G. Data Exchange Models](#).

The managers of most well-known HIOs say that they use a federated model of data sharing. There are two federated models.

Federated Model: Data at Provider Data Center

In the first federated model, all patient data remains on an “edge server” in each provider’s data center. For our purposes, an *edge server* is a server that can be remotely accessed securely which contains data replicated from the provider’s production processing system. When a provider from another organization requests data on a patient, the HIO queries an index which indicates that the patient in question has data on the edge server and the HIO accesses the server for the data. All queries are done “just-in-time.” This means that a disturbance on the network linking the HIO to the edge servers could cause some relevant data to be missed. “Just-in-time” queries across large networks are not efficient and may occasionally miss important data. The advantages and disadvantages of this model are listed in Table 6.1.

¹¹This paragraph is a quote from HIMSS HIE Wiki, HIE Technology, ed. Holly Gaebel, 2011, from The HIMSS Guide to Participating in a Health Information Exchange, of which Lyman Dennis is a coauthor. <https://himsshie.pbworks.com/w/page/34623905/HIE%20Technology>, accessed Aug 26, 2012.

Table 6.1 Federated Model: Data at Providers' Data Center

Pros	Cons
<ul style="list-style-type: none">• This approach keeps data in edge servers (which duplicate data that is sharable) at each provider's data center.• To nervous providers, this appears to be the most secure.	<ul style="list-style-type: none">• All queries are done "just-in-time" so a disturbance on a network line can prevent some data from being transmitted.• The data are no more secure than in other HIE models.• Each query still has to go through the MPI and the RLS <i>at the time of execution</i>.• Problems with matching that must be resolved manually must be handled <i>at the time of the query</i>.

Federated Model: Data at the Exchange

In the second federated model, all a provider's sharable patient data is housed on a proxy server *at the HIO*. The data on the proxy server is controlled in one of two ways: physically by the provider's information technology settings or through policies which the provider can set to control others' access to the data. Many people call this a "hybrid" model. The advantages and disadvantages of this approach are listed in Table 6.2.

Table 6.2 Federated Model: Data at the Exchange

Pros	Cons
<ul style="list-style-type: none">• This approach keeps data in proxy servers (which duplicate data that is sharable) <i>at the exchange</i> (central) data center.• Providers control what data is sharable by either physical control of the proxy server or by data sharing policies.• Queries for data go across all the proxy servers as if it were one server (and it may be sections of single server) and are fast.	<ul style="list-style-type: none">• To the uninitiated, the data are "elsewhere," not in the provider's data center and this seems less secure.• Each query still has to go through the MPI and the RLS <i>at the time of execution</i>.• Problems with matching that must be resolved manually must be handled <i>at the time of the query</i>.

Repository Model

There is a third "repository" model. In this model, all the data from all providers is located in one massive database. When a provider queries for data on a patient, s/he gets all the data from one file on one physical server. This is the most efficient approach but is only accepted if the providers trust the HIO to use data only for permitted uses. The advantages and disadvantages of the repository modes are listed in Table 6.3.

Table 6.3 Repository Model

Pros	Cons
<ul style="list-style-type: none">• All the data from all providers are on a single server, organized by patient.• All the patient matching and record locator functions are run <i>when data are added to the</i>	<ul style="list-style-type: none">• All the community data are on one system so those who worry about "owning their data" may be nervous.

<p><i>clinical data repository (CDR)</i>, not at the time of a query.</p> <ul style="list-style-type: none"> • Any problems with matching or data are resolved <i>as the CDR is built</i>, not when it is used. • Data are as secure in a CDR as in the other models so long as the HIO is well-administered. • Because of the ease of use of the CDR, this is a good model for clinical studies across the community, disease management and other community and public health purposes. 	
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Reality

While the managers of most exchanges say they use a federated model, if you ask how they store lab data, most will say, “in a repository.” The volume of laboratory tests can be very high for one patient, hundreds of results per year (from panels of tests). No one wants a system to search for hundreds of test results across many providers each time the patient’s data is accessed. Some people refer to the combination of a federated model with a repository for test data as “hybrid.” So there are two uses of the term “hybrid.”

To be vividly clear, according to the nation’s best HIE attorneys, the key factor determining the security of provider data in any of the three models of data exchange is how well privacy and security protections are maintained, not which model you select.

6.5 Use of Exchange System Components

In theory, one could purchase components of these core HIO services and integrate them: MPI, RLS and integration engine, but that would make sense only if integrated systems were not available in the market. Most hospital EHR systems have an accompanying integration engine for configuring transactions entering or leaving the hospital systems. For ambulatory EHRs, many providers do not have the skilled staff required to configure transactions and must either contract for consulting configuration services as needed or use an HIO.

6.6 Healthway eHealth Exchange and Direct

Providers and exchanges can be connected across the country using the Healthway eHealth Exchange. The eHealth Exchange is a set of standards, services and policies that enable the secure exchange of health information over the Internet. Currently, several government agencies and enterprise HIOs use this standards architecture to exchange health information. These include the Department of Defense, the Veterans Administration, and the Social Security Administration.

CONNECT is free open-source software developed by a group of federal agencies to share information through the use of Healthway standards, services and policies. CONNECT can be used to set up query-based exchange within an organization but its main use to date has been to link federal agencies, HIOs, integrated delivery systems and other generally larger organizations. As of March 2012, there were 26

participants using eHealth Exchange.¹² CONNECT and similar variations of Exchange specifications are becoming a popular means of HIO-HIO exchange in California. Note that an organization may choose to implement CONNECT without onboarding to the Healtheway eHealth Exchange.

The Direct Project was initiated in March 2010 as a secure, easy-to-use replacement for mail and fax transmissions among providers, and between providers and patients, laboratories and public health departments. Direct operates like secure email and can be sent provider-to-provider or through directory functions called HISPs. Early adopters of Direct include the Hennepin County Medical Center in Minneapolis, the Rhode Island Quality Institute, the Department of Veterans Affairs, Kaiser Permanente, Redwood MedNet, several providers in Connecticut, and a group of providers in Texas. Direct has since become a more widespread transport mechanism that is expected to move a variety of transaction types including CCDs and will be required in Stage 2 of Meaningful Use. Most EHRs now have plans to send and receive transactions using the Direct protocol.

¹²National eHealth Collaborative, Health Information Exchange Roadmap: The Landscape and a Path Forward, p. 9

7 Exchange Services and Interfaces

What's in this section?

- 7.1 **Determine Desired Services.** What HIO services do we want?
- 7.2 **User Interfaces and Workflow.** How do we use the system?
- 7.3 **On the Technology Horizon.** What changes will we face?

This section is about the services an HIO may supply and the provider (and healthplan) member may elect to use. A critical set of decisions of the initially participating organizations will be the “starting lineup” of services. If the initially-used services are appreciated by participants and cost-effective, the case will be made for the HIO.

7.1 Determine Desired Services

There are a large number of potential HIE services. Most vendors and HIOs will provide some of these services but not all. We will discuss the services in categories.

Core Services

Core services are those functions needed to operate a full query exchange. Many of these are not required for the results-delivery only model. The basics are --

- **Master Patient Index** – to distinguish individual patients since there is no uniform patient numbering system in the US or California
- **Record Locator Service** – once the patient is identified, to determine which providers have records for that patient and how to access those records
- **Connectivity to the eHealth Exchange and CONNECT Gateway** – the national eHealth Exchange and specifications for query-based HIO-HIO exchange
- **Secure Clinical Messaging (includes Direct)** – for transmission of patient information among providers (e.g., lab results, radiology results, specialty studies). Direct requires a Health Information Service Provider (HISP) directory service.
- **EHR Interfaces** (not including specific interface configuration, but able to support interface configuration)
- **Provider Directory** – all types of providers, not just physicians
- **Consent Management** (opt-in, opt-out)
- **HISP** – have access to these services or provide them

Basic Exchange Services, Part 1

Basic services are those required for achievement of Stage 1 Meaningful Use and for key HIO functions. These include lab results delivery, ePrescribing, and transport mechanisms to push messages with clinical content between providers:

- **Receipt of Structured Lab Results**

- **ePrescribing**
- **Sharing of Patient Care Summaries across Unaffiliated Organizations (which are using different EHRs)** (discharge summaries, transfers of care, clinical data for referrals)

Basic Exchange Services, Part 2

These include three public health functions required for Stage 1 Meaningful Use which have not been feasible to accomplish until recently. The state is supporting another approach, developing a gateway for immunization data for seven of the regional registries, and further investigating how to provide for orderly submissions of reportable laboratory results and syndromic surveillance data.

- **Immunization Reporting**
- **Reportable Laboratory Results**
- **Syndromic Surveillance Data**

At the present time, high-volume submitters can submit immunizations directly to the state immunization registry and high-volume submitters can submit reportable laboratory results to the California Reportable Disease Information Exchange (CalREDIE). To the extent capacity is available, lower-volume submitters can submit to either of these organizations.

Additional Services

- **HIE Portal** – not all HIE providers supply a portal. At least one provider offers such a robust portal that some clients use the portal in lieu of their EHRs.
- **Lab Ordering** – initiated through the EHR but transmitted through the HIE
- **Personal Health Record** – to allow patients access to their data. Often includes secure patient communication with his/her physician. Also the Blue Button function allowing a patient to download a text version of labs, prescriptions, provider and payer records.
- **Advance Directives**

Value-Added Services

These are services which the HIO may market to provider users and which will be selected by some users and not others. The majority of these are extra-cost services.

- **Referrals to Specialists** -- transmitting the referral information, not the clinical information (which is included in Basic Exchange Services, Part 1)
- **Authorizations** – typically for expensive specialist, testing or surgical services under managed care or an ACO
- **Clinical Data Repository** – accumulation of patient data for purposes of disease management, analysis of clinical practice alternatives, etc.
- **Transcription Service** – to support physicians in practices and hospitals
- **EHR Light** – to provide a hosted EHR targeted to smaller practices

- **Clinical Decision Support / Data Analysis** – to help determine best practices from clinical and administrative data
- **Meaningful Use Registry** – to simplify determination of readiness to submit meaningful use attestation
- **Disease Management** – to track patients with readily-identifiable chronic diseases to better manage their care
- **Enterprise Image Viewer** – to allow provider organizations to see radiology images
- **Portal to HIE** – to allow providers to use an HIE portal to view a longitudinal patient record containing data from multiple sources
- **Medication Reconciliation** – to allow hospitals and other providers to determine medications a patient is currently taking
- **EDI Services** – to support administrative data exchange using X12 transactions such as claims submission (837), payment advice (835), benefit enrollment (834), group premium payment (820), eligibility/benefit inquiry (270), eligibility/benefit response (271), claim status request (276), claim status notification (277), service review information (278) and functional acknowledgement (997). Also includes NCPDP telecommunications standard v 5.1 retail pharmacy claims.
- **Eligibility Checking**
- **Provision of Educational Materials Electronically**
- **Quality Improvement Reporting**
- **Credentialing Services**
- **Group Purchasing**
- **Workflow Redesign for Providers**
- **Hosted Helpdesk for Providers**
- **Systems Implementation Technical Assistance**
- **Clinical Trials Management**

7.2 User Interfaces and Workflow

It is one thing to have certain interfaces to a system and another to have a workflow that is satisfactory to the providers using the system. It is not feasible to deal with this exhaustively so we will provide a few examples.

Laboratory Ordering and Results

Laboratory results transactions are much more used than electronic lab ordering. When only results are electronic, paper lab slips or computer-printed lab slips are sent to the laboratory. The error rate with hand-written paper lab slips has been observed to be about 10%. The computer-printed lab-order slips reduce error rates to as low as 1% to 2%, depending on the discipline imposed by the laboratory receiving the slips and entering them into their system. If lab orders are computer entered by the provider and returning lab results are matched with the orders to assure that all orders are “resulted,” the error rates can be 1% or less.¹³ Another element of receipt is whether the results flow directly into the EHR or go to a staging area for review before loading into the EHR.

¹³Reported experience of Santa Cruz HIE, July 2012.

Using Direct

The Direct function developed by ONC is a mode for sending files by secure email. The provider determines the secure address of the target destination provider using a Health Information Service Provider (HISP) directory, prepares a message, attaches the payload file and sends the message (which is secure). The destination provider must receive the message, open it, remove the file and put it in the proper location in the EHR or in another storage or use location. Messages may actually flow from a provider to a HISP to another HISP to the destination provider. Providers may use a special “inbox” to send and receive Direct messages, though EHR vendors are increasingly incorporating Direct into their platforms and this will be required as part of Stage 2 Meaningful Use. This is a significant improvement from a provider workflow perspective. Many EHR vendors are now developing more systematic approaches to sending and receiving Direct messages that will automate some or all of the functions.

HIE Portals

Some HIEs function simply to move data between EHRs and do not have associated portals except for technicians to monitor functioning. Some HIEs are more portal based (e.g., ICA) and other HIEs have portals designed to allow providers to view the longitudinal patient record (e.g., Orion). As a general rule, providers resist using more than one methodology to view patient data given the time to access multiple systems. The best workflow solution is an integrated system that allows all data to be accessed with a single tool. For most settings, this tool will be the EHR.¹⁴ In the Orion example above, that organization’s HIE is used by several large clients for access to all the known data on a patient, in lieu of the local EHR which may not contain some important patient data. A best solution would be to have all the data available through the local EHR. That would mean that the local EHR accepts all foreign data, matches it to remove duplicate reporting, and, preferably, lists the source of each data element in the event that a provider decides to investigate an aberrant result.

Interfaces to EHRs

Because of the variability among interfaces based on the same standard, the interfaces between the HIO and EHRs do not snap together, even for different implementations of the same vendor’s EHR with a single HIE. This results in significant relatively inefficient work with each EHR-to-HIE-to-EHR implementation.

HIE-Supplied Data

Many larger clinical organizations have confidence in data from that organization but less confidence in data imported from another source. These organizations may cloister the imported data in a different portion of the EHR or have it not in the EHR at all but accessible from the EHR via a link or tab. If this is well-organized, it may work reasonably well, though imported data may be given less credibility than data from in-house providers, labs, etc. A related problem that has been found to be troublesome when most data are electronic is that the volume of data becomes oppressive and there is a concern among providers about the best way to load the most important data and not all the data. Kaiser Permanente has reported that this is a major concern.¹⁵

¹⁴In health systems with enterprise HIE, this tool may be their internal HIE portal.

¹⁵John Mattison, Chief Medical Information Officer, Kaiser Permanente, presentation to IEHIE, Sep 2010.

7.3 On the Technology Horizon

Technology is constantly evolving. While Stage 1 meaningful use is the current predominant concern, Stage 2 measures were released as a Final Rule¹⁶ on August 23, 2012, and the possible Stage 3 measures are being widely discussed. In addition, there is substantial activity underway by the Office of the National Coordinator (ONC) and by others to improve functionality of exchange. All of this activity is well-intentioned but much of it also impacts exchange by providing additional or different specifications, rules, and guidance for transactions. Three key initiatives are mentioned below:

Standards & Interoperability Framework

This is an initiative of ONC to enhance the structure supporting exchange. Some key elements include:

- Certifying HISPs for Direct
- Improving the structure used for transitions of care
- Lab results initiative
- Decisions on vocabularies and OIDs
- Provider directories for Direct
- Query health
- Blue Button functionality

For details of these and other initiatives of the S&I Framework team, go to <http://wiki.siframework.org/>.

HIE Ready Buyers' Guide

One of the major costs of implementing health information exchange is implementing bi-directional interfaces so that EHRs of two or more healthcare providers can communicate. Stage 1 and Stage 2 meaningful use require some exchange of information and Stage 3 is expected to require more. The specification of a certified EHR is not enough to ensure that exchange specifications will be consistent among EHRs and HIOs. The California Health eQuality ("CHeQ") program in the UC Davis Institute for Population Health Improvement ("IPHI") has produced the *HIE Ready Buyers' Guide* to identify interoperability and interface features that should be in place to support healthcare data exchange.

EHRs and HIEs in California have been encouraged to execute the "HIE Ready" memorandum of understanding which is a commitment as follows:

1. The organization is or will become compatible promptly with the specified architecture for exchange in California.
 - a. Will support the California trust environment including a model for a directory, abiding by S&I Framework and other standard approaches.
 - b. Will support trust services to establish the identity of exchange entities and individuals, utilizing California standards.
2. Meets other technical criteria which may be decided upon by ONC and California public entities, including California Department of Health Care Services, California Health eQuality program at UC Davis , CalOHII, etc.

Relevant documents may be found at

<http://www.ucdmc.ucdavis.edu/iphi/Programs/cheq/HIEready.html>.

¹⁶http://ofr.gov/OFRUpload/OFRData/2012-21050_PI.pdf.

EHR/HIE Interoperability Workgroup

The EHR/HIE Interoperability Workgroup, a consortium of forward thinking States, leading market share EHR Vendors and HIE Vendors was formed with the goal of increasing the adoption of EHRs and HIE services by eliminating the significant “interface” cost and time barrier. The workgroup members have collaborated to leverage existing standards and provide guidance around specific implementations for the most commonly used interfaces by defining plug and play connections between EHRs and HIEs.

Vendor participants have agreed to comply with the workgroup’s guidelines and specifications regarding their respective EHRs and HIEs and states have agreed to promote vendors that comply with these specifications.¹⁷

¹⁷This description is quoted from the EHR|HIE Interoperability Workgroup website at <http://www.interopwg.org/about.html>.

8 Business Plan and Budget

What's in this section?

- 8.1 **Becoming Sustainable.** How can we be sure we will survive?
- 8.2 **Savings from HIE.** What savings we can expect?
- 8.3 **Workplan/Schedule.** The timing of activities from now to operations.
- 8.4 **Preliminary Budget.** Our best budget using existing cost estimates.
- 8.5 **Providers' Budget for Exchange.** Ask providers to put exchange in their budgets.

Health data exchange is a business. In any business, the foundation is a plan and associated budget that together are feasible for accomplishing the objectives of the organization. What belongs in a business plan? A report addressing every topic in this document would be the most thorough form of a business plan. In this section, we focus on HIO sustainability, the workplan steps, the budget as it can be estimated at this time in the process and the need for providers to budget for health information exchange.

8.1 Sustainability Considerations

In the first dozen years of the 2000s, there has been grant support for many startup HIOs. While there are conspicuous successes, there have also been a number of failures or constrained successes. What are some of the reasons?

1. **Grant orientation.** A major factor in building a poor business model is reliance on grant funds for all initial HIO functions. The result is the providers using the services have had a free ride during the grant period and tend to consider HIE an entitlement. When the grants end, the providers are not ready to pick up the cost of services. The learning:
Lesson: If available, use grant funds to support infrastructure development, startup and interface costs. Require providers to subscribe to services with their own funds from the beginning. If subscribers will not pay for services, there is not adequate demand for them.
2. **"Us first."** Despite the requirements of ARRA Stage 2 for meaningful exchange of health data between unaffiliated providers using differing EHRs, there are still many hospital and physician systems building enterprise HIOs without initially linking community providers beyond those contracted closely with the organization. This is a way of staying with the familiar: "I have an exclusive care system now. I will keep this model and add HIE." It remains to be seen whether enterprise HIOs will successfully lock patients in or out of that structure. The enterprise model works for Kaiser Permanente because Kaiser is years ahead of others in systems and patients appreciate the personal aspects of the technology. The eHealth Exchange is designed to link exchanges and there is a requirement (in ARRA-funded grants) that exchanges offer eHealth Exchange but not that providers in the HIO use it.

Lesson: New exchange efforts need to be wary that participants not revert to enterprise plans instead of embracing community exchange – this is not an either/or decision. It is important to stress the business value of community HIE given patient movement across systems.

8.2 Assess Probable Saving Contribution from HIE Services

While it would generally be naïve to consider that exchange of health data would generate net savings in the short term, there will be areas of savings and HIO participants need to identify those and factor those into the budget as offsetting costs.

Savings from Paperless Operation

HIMSS Analytics, a unit of the Health Information Management and Systems Society, classifies organizations from “0” to “7” base on the extent of information systems use (Table 8.1).¹⁸

Table 8.1 HIMSS Analytics EMR Adoption Model

US EMR Adoption Model SM			
Stage	Cumulative Capabilities	2012 Q1	2012 Q2
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP	1.2%	1.7%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	6.2%	6.5%
Stage 5	Closed loop medication administration	9.4%	11.5%
Stage 4	CPOE, Clinical Decision Support (clinical protocols)	13.2%	13.3%
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	43.9%	42.4%
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable	12.1%	11.7%
Stage 1	Ancillaries - Lab, Rad, Pharmacy - All Installed	5.5%	5.1%
Stage 0	All Three Ancillaries Not Installed	8.4%	7.9%

Data from HIMSS AnalyticsTM Database © 2012

N = 5,318 N = 5,303

While there have not been any randomized clinical trials to determine the benefits of the achievement of Stage 6 and Stage 7 levels of performance, the Advisory Board and HIMSS Analytics did perform a survey study of 33 hospitals, 6 from Stage 7 and 27 from Stage 6. The results of the survey are available online.¹⁹ The study summarizes the results as follows (p.13):

¹⁸HIMSS Analytics, <http://www.himssanalytics.org/stagesGraph.asp>, viewed 8/23/12, used by permission of Joyce Lofstrom, HIMSS Analytics, obtained 8/30/12.

¹⁹The Advisory Board Company and HIMSS Analytics, 2012 at <http://www.himss.org/content/files/EMRBenefitSurvey0212.pdf>.

The major conclusions from this survey are:

- Hospitals with advanced EMRs have purchased their EMRs for the specific purpose of improving clinical quality and patient safety.
- Hospitals with advanced EMRs explicitly target clinical objectives such as adverse drug event reduction, core measure improvement and other patient safety improvements; they pursue these objectives with a number of explicit benefit realization strategies.
- Hospitals with advanced EMRs report achieving a broad range of benefits from their EMR implementations, including clinical quality, patient safety and operational efficiencies.
- Hospitals that target specific areas of benefit are more likely to report achieving those benefits.

This survey is the first to report results from a large number of EMR Stage 6 and 7 hospitals. These results paint a very different picture than those from other recent studies of hospitals with EMRs across all EMR levels, supporting the conclusion that hospitals with more advanced EMRs may be more able and likely to realize substantial benefits.

We anticipate that the reasons for quality improvement stem from having more complete data on patients and better access to the data. The reasons for lower cost from HIE include fewer duplicated tests, more complete data allowing diagnoses to be made more rapidly and accurately, reduced medication errors, and resulting reductions in ER visits and hospital re-admissions. The study cited above lists a dozen or more factors that were thought by respondents to be improved with an EHR.

Patient Safety Improvements

Medication errors and hospital-induced infections would be lower. Readmissions would be lower. Other patient safety improvements are cited in the above survey study.

Functions Specific to Setting

Some functions may be performed that can be clearly improved through the use of electronic data transfer. For example, a hospital that has a connection to Surescripts for checking ambulatory medications can reconcile hospital and external medications accurately, a benefit to both care and cost, potentially avoiding adverse drug responses (from allergies and interactions) and duplication of medications.

8.3 Workplan/Schedule

Part of the business plan development is identifying the activities to be performed and the timing of each. We call this the workplan. A sample workplan is shown in Figure 8.1, also included in [Appendix H](#) in a more readable size. This particular example is lengthy for a team that has implemented exchange previously and tight for the first HIO implementation.

Figure 8.1 Sample Workplan/Schedule

#	Activity	Duration	2012			2013			2014			2015		
			Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July
1	Prepare & Submit 501c3 Application	60 days												
2	Perform Community HIE Assessment	60 days												
3	Develop Community HIE Plan Report	30 days												
4	Develop Permanent Governance Structure	90 days												
5	Edit Participation Agmt, DURSA, etc.	90 days												
6	Develop Policies & Procedures	90 days												
7	Develop & Issue RFI (criteria, HIEs, vendors)	30 days												
8	Evaluate RFI Responses. Select short list.	30 days				Vendor Response								
9	Develop & Issue RFP (HIEs & vendors)	30 days												
10	Select HIE or Vendor Finalists	30 days							Vendor Response					
11	Presentations by Finalists, Site Visits	30 days												
12	Negotiate & Execute HIE/Vendor Agreement	60 days												
13	Obtain Provider Participation Commitments	180 days												
14	Vendor/HIE Implements Infrastructure	60 days												
			2013			2014			2015			2016		
12	Vendor/HIE Implements Infrastructure	60 days												
13	Go-Live with Initial Providers	120 days												
14	Post Implementation Assessment	90 days												
15	First Expansion	120 days												
16	Second Expansion	Ongoing												---->

8.4 Develop Preliminary Budget

The budget that can be developed at this stage is necessarily preliminary as the exchange has not sought quotes from providers of HIE services. One can obtain approximate quotations for such services from HIEs in adjacent communities or those providing services from remote locations, but all costs are not typically known until an HIO has a detailed quote that both parties agree covers every desired service. [Appendix I](#) contains two budgets as examples. The difference between the preliminary budget and the final budget is that the contract cost and staffing are based on what has been negotiated with the HIE service provider.

Table 8.2 Cost by Organization Type

Provider	Assumed Number	Per Provider	2012	2013	2014	Total
Hospitals (beds)	1000	\$ 600	\$ 600,000	\$ 600,000	\$ 600,000	\$ 1,800,000
Physicians	1000	\$ 600	\$ 600,000	\$ 600,000	\$ 600,000	\$ 1,800,000
Community Clinics	10	\$ 1,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 30,000
Health & Human Svcs	3	\$ 10,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 90,000
Grants			\$ 200,000	\$ 100,000		\$ 300,000
Total Revenue			\$ 1,440,000	\$ 1,340,000	\$ 1,240,000	\$ 4,020,000

Table 8.2 presents a crude model in the sense that it has a single number for each provider type per year. A better model would have three numbers: (1) a startup fee for infrastructure, (2) a fee for interfaces and (3) an ongoing annual services fee. As an example in Table 8.3, one HIE charges for several bed sizes are on this order:

Table 8.3 HIE Charges to Hospitals Based on Numbers of Beds

Beds	Startup Fee (one time)	Per Bed Annual Fee
75	\$35,000	$\$333 \times 75 = \$25,000$ per year
175	\$55,000	$\$314 \times 175 = \$55,000$ per year
400	\$70,000	$\$212 \times 400 = \$85,000$ per year

Source: Undisclosed HIE, 2012.

These can be determined at the stage of receipt of bids. The examples above do not include the costs of building interfaces at the provider end. These costs have two components: (1) a fee to the EHR vendor for a “gateway” for that specific interface (inbound or outbound) plus (2) the cost of configuring or programming the interface on the provider’s interface engine or translator (or that of the HIO for a small provider). Different providers of HIE services may charge less or more for initial implementation so firm quotes are needed for pricing at that level of detail. If physicians are organized into IPAs or medical groups, pricing may be determined on the basis of those groupings.

One full business plan not available to show for this report uses points assigned to providers (hospitals, medical groups, health and human services and community clinics) and the weights are used for pricing. Discussions indicate that the weights were adjusted to achieve what is considered a fair pricing arrangement, including consideration for safety net organizations.

8.5 Ask Participants to Budget for Exchange

A common experience among developing health exchanges is that a group meets periodically over a year or two (longer times in the past than now). At the time when member organizations are needed to sign participation agreements with significant dollar commitments, the group historically discovers that the participants have been enthused but the senior management was not aware of what was happening and there are no funds in budgets for exchange. The process is delayed for six months to a year, or never happens because the leaders of the participating organizations were not on-board.

Therefore, the organizer(s) want to be sure to advise participants in the HIO development process to (1) keep senior management advised of progress by sending information and briefing them in person and (2) put funds in the organization’s budget for exchange, preferably a bit generously, so that exchange is not an unbudgeted item when the time comes for contracting. The process of getting funds budgeted will “wake up” the organization to exchange and it will be expected, not a surprise.

9 Participation Agreement and DURSA

What's in this section?

- 9.1 **Modular Model Participants Agreement.** This is the model agreement for California.
- 9.2 **Markle Model Contract.** This is the current model participation agreement with all its optional provisions.
- 9.3 **DURSA for eHealth Exchange.** This is the national agreement for sharing using the Healthway eHealth Exchange.
- 9.4 **Policies and Procedures.** These are model P&P from several sources.

The participation agreement is the contract among providers using an HIO. There are two guiding documents for the participation agreement: (1) the new California Modular Model Participants Agreement (MMPA) and (2) the Markle Connecting for Health model agreement. This section will deal with the MMPA first. There is also a third agreement, the Data Use and Reciprocal Support Agreement (DURSA) that is used by parties exchanging data over the Healthway eHealth Exchange.

9.1 CalOHII Modular Model Participants Agreement

This is a simplified participation agreement designed for California to facilitate transfers of care transactions which occur among disparate EHRs and may cross HIEs. The Modular Model Participants Agreement (MMPA) draws upon the Markle Connecting for Health Model Participation Agreement ("Model Contract") and is designed to support summary of care records used for transitions of care and referrals which will meet Stage 1 meaningful use requirements. The Markle Model Contract was developed by a small team including Gerry Hinkley and Alan Briskin, then with Davis Wright Tremaine, LLP. The MMPA was developed by a group with Alan Briskin, now working with Gerry Hinkley at Pillsbury Law, as the facilitator. Attorneys Hinkley and Briskin are nationally regarded specialists in HIE law so we can have confidence that the California MMPA has involved the best legal talents and has the benefit of the Markle work. The MMPA and further information about it is available on the CalOHII website at <http://www.ohii.ca.gov/calohi/aboutcalohii/news/tabid/137/vw/1/itemid/12/model-modular-participants-agreement.aspx>. The box below contains the sections of the MMPA.

- 1 Introduction and General Provisions
- 2 Development and Dissemination of Participation Agreements
- 3 Term and Termination of Participation Agreements
- 4 Authorized Users
- 5 General Obligations of Participants
- 6 Data Recipient's Use of System and Services
- 7 Data Providers' Use of System and Services
- 8 Associated Hardware and Software to be Provided by HIO
- 9 Privacy and Security of Patient Data
- 10 Business Associate Agreement
- 11 HIO's Operations and Responsibilities

- 12 Governance
- 13 Fees and Charges
- 14 Proprietary and Confidential Information
- 15 Disclaimers, Exclusions of Warranties, Limitations of Liability and Indemnification
- 16 Insurance and Indemnification
- 17 Transparency, Oversight, Enforcement and Accountability
- 18 Miscellaneous Provisions

9.2 Markle Connecting for Health Model Contract

Over the last decade, the Markle Foundation unit, Connecting for Health, has developed a series of policy documents and technical documents that have been widely used in the development of secure exchange of patient information. [Table 9.1](#) in section 9.4, Policies and Procedures, which follows in several pages, indicates the policy and technical documents that are consistent with the Markle Model Contract for Health Information Exchange. Each of the referenced documents is available on the Markle website at <http://www.markle.org/health/markle-common-framework/connecting-professionals>. The Model Contract is currently being updated and may be available shortly after this document is published. The Markle Model Contract, like the CalOHII MMPA, includes optional provisions that may be selected according to the intent of the HIO organization. The Model Contract is not included in this document because it is in revision and because the document is quite lengthy. The link above will provide the most recent version at the time it is needed. The sections of the Model Contract are listed in the box below.

- 1 Introduction
- 2 Definitions
- 3 Terms and Conditions
- 4 Registration Agreements
- 5 Authorized Users
- 6 Data Recipient's Right to Use Services
- 7 Data Provider's Obligations
- 8 Software and/or Hardware Provided by the HIO [Markle uses the term "SNO" for "Sub Network Organization," but they mean "HIO."]
- 9 Protected Health Information
- 10 Other Obligations of the Parties
- 11 HIO Operations and Responsibilities
- 12 Fees and Charges
- 13 Proprietary Information
- 14 Disclaimers, Exclusions of Warranties, Limitations of Liability and Indemnifications
- 15 Insurance and Indemnification

A quick comparison of the outlines of the MMPA and the Markle Model Contract indicates the same topics are being addressed. The added value of the MMPA is that it considers California law and is shorter.

9.3 DURSA for eHealth Exchange

The Data Use and Reciprocal Support Agreement (DURSA) is used by parties transferring data over the eHealth Exchange. The DURSA is the legal, multi-party trust agreement that is entered into voluntarily by all entities, organizations and Federal agencies that desire to engage in electronic health information exchange with each other using an agreed upon set of national standards, services and policies developed in coordination with the Office of the National Coordinator for Health IT (ONC) in the U.S. Department of Health and Human Services. Those who sign the DURSA are known as "Participants."²⁰

The current version of the DURSA is available at

http://jira.siframework.org/wiki/download/attachments/12386581/Restatement_I_DURSA_May_2011_Final.pdf.

The DURSA is based upon the existing body of law (Federal, state, local) applicable to the privacy and security of health information and supports the current policy framework for health information exchange. The Agreement reflects consensus among the state-level, federal and private entities who were involved in the development of the DURSA regarding the following issues:

- Multi-Party Agreement
- Participants Actively Engaged in Health Information Exchange
- Privacy and Security Obligations
- Requests for Information Based on a Permitted Purpose
- Duty to Respond
- Future Use of Data Received from Another Participant
- Respective Duties of Submitting and Receiving Participants
- Autonomy Principle for Access
- Use of Authorizations to Support Requests for Data
- Participant Breach Notification
- Mandatory Non-Binding Dispute Resolution
- Allocation of Liability Risk²¹

9.4 Policies and Procedures

There are a number of sources for model policies and procedures for health data exchange.

Markle Foundation

The Markle Policies and Technical Guides listed on its website at <http://www.markle.org/health/markle-common-framework/connecting-professionals> are one set. That page lists the following (web-based) documents:

²⁰Largely quoted from the Office of the National Coordinator website, <http://jira.siframework.org/wiki/display/OBTI/DURSA+Overview>, accessed Aug 24, 2012.

²¹Ibid.

Table 9.1 Markle Policy and Technical Guides

Policy Guides	Technical Guides
P1 The Architecture for Privacy in a Networked Health Information Environment P2 Model Privacy Policies and Procedures for Health Information Exchange P3 Notification and Consent When Using a Record Locator Service P4 Correctly Matching Patients with Their Records P5 Authentication of System Users P6 Patients' Access to Their Own Health Information P7 Auditing Access to and Use of a Health Information Exchange P8 Breaches of Confidential Health Information P9 A Common Framework for Networked Personal Health Information	T1 The Common Framework: Technical Issues and Requirements for Implementation T2 Health Information Exchange: Architecture Implementation Guide T3 Medication History Standards T4 Laboratory Results Standards T5 Background Issues on Data Quality T6 Record Locator Service: Technical Background from the Massachusetts Prototype Community T7 Consumer Authentication for Networked Personal Health Information

These are generally background documents on key issues in exchange. The second policy document, P2 Model Privacy Policies and Procedures for Health Information Exchange, contains a number of actual policies, listed below in Table 9.2:

Table 9.2 Markle Model Privacy Policies

Privacy Policies
Policy 100: Compliance with Law and Policy Policy 200: Notice of Privacy Practices Policy 300: Individual Participation and Control of Information Posted to the RLS Policy 400: Uses and Disclosures of Health Information Policy 500: Information Subject to Special Protection Policy 600: Minimum Necessary Policy 700: Workforce, Agents and Contractors Policy 800: Amendment of Data Policy 900: Requests for Restrictions Policy 1000: Mitigation
Source: Markle Foundation, http://www.markle.org/health/markle-common-framework/connecting-professionals/p2 , accessed Aug 25, 2012.

Rhode Island Quality Institute

The Rhode Island Quality Institute has developed 18 Policies and Procedures for its CurrentCare HIE. These are listed in Table 9.3 below.

Table 9.3 CurrentCare, Rhode Island Quality Institute Policies & Procedures

Policies & Procedures
<p>Cc01 – End User Registration Policy</p> <p>Cc02 – User Authentication Policy</p> <p>Cc03 – Monitoring Information Access Policy</p> <p>Cc04 – RI HIE Enrollment Policy</p> <p>Cc05 – CurrentCare Revocation of Authorization and Provider Access Policy</p> <p>Cc06 – Missing policy</p> <p>Cc07 – Request to Access Record Policy</p> <p>Cc08 – Enrollee Request for Disclosure Report</p> <p>Cc09 – Enrollee Request to Amend Record Policy</p> <p>Cc10 - Data Correction Amendment Policy</p> <p>Cc11 – RI HIE Complaints Policy – 2008 May 22 – FNL</p> <p>Cc12 – Response to Breach of CurrentCare</p> <p>Cc13 – Notification of Breach Policy</p> <p>Cc14 – Privacy Practices Policy</p> <p>Cc15 – RI HIE Temporary Authorization Policy – 2008 May 22 – FNL</p> <p>Cc16 - Role-based Permissions – 2008 Mar 27 – FNL</p> <p>Cc17 – Recourse for Violation of Data Sharing Data Use Agreement</p> <p>Cc18 – RI HIE Patient Authorization Policy Statements 2007 0923 – FNL</p>
<p>Source: Current Care, Rhode Island Quality Institute website, http://www.currentcareri.com/matriarch/MultiPiecePage.asp_Q_PageID_E_26_A_PageName_E_PoliciesProcedures, accessed Aug 25, 2010.</p>

Redwood MedNet

Redwood MedNet has a set of policies and procedures at

http://www.redwoodmednet.org/projects/hie/docs/rmn_privacy_20100225.pdf.

Other California HIOs may make their policies and procedures available upon request.

10 Privacy and Security

What's in this section?

- 10.1 **Federal Privacy & Security Requirements.** What federal law & regulation applies?
- 10.2 **State Privacy & Security Requirements.** What state law & regulation add?
- 10.3 **Your Patient Consent Standard.** Do you want opt-in, opt-out, no choices?
- 10.4 **Notice of Privacy Practices.** What do you tell the patient about your privacy standard?

Privacy and security are somewhat complicated in California because California law and regulations are more stringent than federal law. In this section, we will first review federal law and then California law. As is the case with many aspects of exchange, the laws and regulations are evolving, though the basics are fairly well established.

10.1 Federal Privacy and Security Requirements

The principal privacy and security requirements from the federal level are regulations from the Health Insurance Portability and Accountability Act of 1996 or “HIPAA,” which became effective for privacy on April 14, 2003, and for security on April 21, 2005. The final rule regarding enforcement of HIPAA became effective March 16, 2006. The HIPAA rules were strengthened by the HITECH Act portion of the American Recovery and Reinvestment Act. A second source is the Patient Safety and Quality Improvement Act of 2005 (PSQIA) which became effective Jan 19, 2009.^{22 23}

HIPAA Privacy Rule

The HIPAA Privacy Rule governs the use and disclosure of Protected Health Information (PHI) that is held by “covered entities.” Covered entities are typically providers, health insurers, health plans, employer sponsored health plans and healthcare clearinghouses. By regulation, DHHS extended the HIPAA privacy rule to independent contractors by developing a classification of “business associates.” PHI is any information held by a covered entity which concerns the health status, provision of care or payment for health services that can be linked to an individual. Covered entities must disclose PHI to a covered individual within 30 days of a request. They must also disclose PHI when required to do it by law.

A covered entity may disclose PHI for three reasons: (1) to support patient treatments, (2) to enable payment and (3) for healthcare operations. Any other disclosures of PHI require the covered entity to obtain written authorization from the individual. When a covered entity discloses PHI, it must make a reasonable effort to disclose only the minimum necessary information required to achieve the objective of the disclosure. Under the Privacy Rule, individuals may request correction of any inaccurate PHI.

²²This section on Privacy and Security draws heavily from Wikipedia which has a well-written summary of the rules, http://en.wikipedia.org/wiki/Health_Insurance_Portability_and_Accountability_Act and http://en.wikipedia.org/wiki/Health_Information_Technology_for_Economic_and_Clinical_Health_Act#Subtitle_D-Privacy, accessed Aug 25, 2012.

²³See Office for Civil Rights, DHHS at <http://www.hhs.gov/ocr/privacy/hipaa/administrative/index.html>, accessed Aug 25, 2012.

The privacy rule requires covered entities to notify individuals of uses of their PHI. Covered entities must maintain records of disclosures of PHI. Covered entities must appoint a Privacy Officer and a person responsible for receiving complaints and must train all employees about procedures regarding PHI. The Covered entity must have policies and procedures for its implementation of its privacy practices.

Concerns about a covered entity not upholding the Privacy Rule may be reported to the DHHS Office for Civil Rights (OCR). Early in the implementation of HIPAA, there were few visible actions by the OCR but in the last several years there have been some large settlements and fines.

HIPAA Security Rule

The Privacy Rule deals with PHI including both paper and electronic forms. The Security Rule deals specifically with Electronic Protected Health Information (EPHI). The Security Rule specifies three security safeguards: administrative, physical and technical. For each type of safeguard, the Rule specifies a list of standards and lays out both required and addressable implementation specifications for many standards. This flexibility is to deal with the variety of organizations implementing the standards (from single physician offices to large integrated delivery systems).

Administrative Safeguards are reflected in policies and procedures that demonstrate how the covered entity will meet the requirement of the Security Rule. Requirements for the policies and procedures include:

- Must adopt a written set of security procedures and designate a security officer
- Must reference management oversight and the presence of documented security controls.
- Procedures should clearly identify employees or classes of employees who will have access to electronic protected health information (EPHI) who have a need for it to complete their job function.
- Procedures must address access authorization, establishment, modification, and termination.
- There must be appropriate ongoing training regarding the handling of PHI.
- Third-party vendors must have a framework in place to comply with HIPAA requirements.
- A contingency plan should be in place for responding to emergencies. Covered entities are responsible for backing up data and having disaster recovery procedures in place. The plan should document testing activities and change control procedures.
- There should be periodic internal compliance audits with the goal of identifying potential security violations. Policies and procedures should specifically document the scope, frequency, and procedures of audits.
- Procedures should document instructions for addressing and responding to security breaches.

Physical Safeguards control physical access to EPHI.

- Controls must govern the introduction and removal of hardware and software from the

network.

- Access to equipment containing health information should be carefully controlled and monitored.
- Access to hardware and software must be limited to properly authorized individuals.
- Required access controls consist of facility security plans, maintenance records, and visitor sign-in and escorts.
- Policies are required to address proper workstation use. Workstations should be removed from high traffic areas and monitor screens should not be in direct view of the public.
- If the covered entities utilize contractors or agents, they must be fully trained on their physical access responsibilities.

Technical Safeguards control access to computer systems and protect communication of EPHI.

- Information system housing PHI must be protected from intrusion.
- Information flowing over public networks must be encrypted.
- Each covered entity is responsible for assuring that data within its systems is not changed or deleted in an unauthorized manner.
- Data integrity is protected by check sums, message authentication, digital signatures and the like.
- Covered entity trading partners must be authenticated using such approaches as password systems, telephone callback or tokens.
- Risk analysis of security is required and must be documented.

HITECH Changes to HIPAA Privacy and Security

The HITECH act extends the privacy and security provisions of HIPAA to business associates of covered entities, which includes health data exchanges. The Act requires covered entities to report data breaches affecting 500 or more individuals to DHHS and the media and to notify affected individuals. Regulations dealing with breaches have been published by both DHHS and the Federal Trade Commission as required by the Act. Accounting for disclosures of PHI is extended to electronic health records.

Patient Safety and Quality Improvement Act

PSQIA establishes a voluntary reporting system to enhance the data available to assess and resolve patient safety and health care quality issues. To encourage the reporting and analysis of medical errors, PSQIA provides Federal privilege and confidentiality protections for patient safety information which includes information collected and created during the reporting and analysis of patient safety events. The objective of the Act is to create an environment where providers may report and examine patient safety events without fear or risk of increased liability. The Agency for Healthcare Research and Quality (AHRQ) works with patient safety organizations (PSOs) to collect and analyze patient safety information.

10.2 State Privacy and Security Requirements

There are three California laws that apply to access to and privacy of personal health information:

- Patient Access to Health Records Act (PAHRA)

- Confidentiality of Medical Information Act (CMIA)
- Information Practices Act of 1977 (IPA)

These acts have various effects on

- Accessing medical records and the privacy of medical information
- How a person gains access to his/her medical record
- Whether a patient can make changes to information in her/his file
- Whether a personal representative can request a patient's file
- What is included in a valid authorization to access medical records
- When a provider may deny access to health information sought by a valid authorization
- What a patient who is denied access can do
- Special rules for minors

These issues are not reviewed here but are discussed at <http://healthconsumer.org/cs028MedicalRecords.pdf>, accessed Aug 25, 2012.

The Confidentiality of Medical Information Act (CMIA) explicitly limits the release of medical information if the information relates to the patient's participation in outpatient treatment with a psychotherapist, subject to some other provisions.²⁴

There are several additional laws that may impact privacy of medical information:²⁵

- Insurance Information and Privacy Protection Act, Ins. Code §§ 791-791.27.
- Elder Abuse and Dependent Adult Civil Protection Act, Welf. & Inst. Code §§ 15600 *et seq.*
- Child Abuse and Neglect Reporting Act, Pen. Code §§ 11164 *et seq.*
- Lanterman, Petris, Short Act, Welf & Inst. Code §§ 5328 *et seq.*
- Disclosure of Genetic Test Results by a Health Care Service Plan, Cal. Civ. Code § 56.17
- Use and Disclosure of Medical Information by Employers, Cal. Civ. Code §§ 56.20-56.25
- California Public Records Act, Cal. Gov. Code § 6250 *et seq.*

The California Office of Health Information Integrity has published a Preemption Analysis of State Privacy Laws on its website at http://ohii.ca.gov/calohi/HIPAA/HIPAAPreemption.aspx#completed_preemption which details the interaction of HIPAA with each of the acts listed above. The site also contains updated policies (not yet reflecting HITECH changes).

²⁴Confidentiality of Medical Information Act, California Civil Code Sections 56-56.16, <http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=civ&codebody=&hits=20>, accessed Aug 25, 2012.

²⁵*Ibid.*

The Privacy Rights Clearinghouse offers a number of papers on its website relating to California and other law and regulation pertaining to privacy and lists the applicable acts and sections that apply. The California Medical Privacy Series includes the following:

Table 10.1 Privacy Rights Clearinghouse: California Medical Privacy Series

California Medical Privacy Series
C1. Medical Privacy Basics for Californians
C2. How Is Your Medical Information Used and Disclosed -- With and Without Consent?
C3. Your Medical Information and Your Rights
C4. Your Prescriptions and Your Privacy
C5. Employment and Your Medical Privacy
C6. Health Information Exchange: Is Your Privacy Protected?

10.3 Determine Desired Patient Consent Standard: Opt-Out versus Opt-In

One of the significant concerns in establishing exchange of health data is the patient consent standard used. While there are more than two standards, the dichotomy of opt-out versus opt-in normally characterizes the choice.

- **Opt-in.** This model typically requires the consumer to affirmatively choose to allow his/her records to be shared. The advantage of this approach is that no one participates without having become adequately educated regarding exchange to make an affirmative choice. The disadvantage is that many patients who either do not have time to learn about exchange or who may not be approached (e.g., safety net patients), may lose the advantages of having data available for treatments and may suffer health consequences.
- **Opt-out.** This model requires that the consumer be given notice through their provider's notice of privacy practices or otherwise that her/his information will be shared. If the consumer objects, s/he can fill out a form to withdraw from information sharing. The advantage of this approach is that the normal paper method of information sharing is carried over to electronic sharing with no need for a marketing campaign to attract consumers to affirmatively opt-in. The disadvantage is that a few patients who missed the notices may have data shared when they would have preferred otherwise.
- **No-consent.** This is an unusual model used by the Indiana Health Information Exchange. It does not require express consent of the patient for information sharing nor can the patient opt-out. Sharing does not include certain sensitive health information.²⁶ The advantage of this approach is that it is very simple to administer. The disadvantage is that patient's desires and, perhaps, rights, are not considered.

There are a number of additional questions about privacy standards. These include:

- The type and extent of consumer education and outreach related to a consent

²⁶Opt-in Versus Opt-out: Consent Models for Health Information Exchange through Missouri's Statewide Health Information Exchange Network, Apr 14, 2010, http://www.dss.mo.gov/hie/leadership/pdf2010/optin_vs_optout_overview.pdf, accessed Aug 25, 2012.

decision;

- The duration and ease of revocation of consumer consent;
- The ability to “break the glass” to obtain health information in an emergency;
- The extent to which consumers may control what information providers are allowed to share;
- To what extent consumers may exclude certain types of health information;
- Whether the HIO limits or excludes specially protected health information such as HIV status, behavioral health and abortion services;
- The desire to create consistency with policies of adjacent states; and
- The extent of security, enforcement and remedies available.²⁷

10.4 Notice of Privacy Practices

The HIPPA Privacy Rule gives individuals a fundamental right to be informed of the privacy practices of most of their health care providers and their health plans. The notice of privacy practices is intended to focus individuals on privacy issues and concerns and to prompt discussions with their providers and health plans. Covered entities are required to provide the notice in plain language that describes:

- How the covered entity may use and disclose protected health information about the patient.
- The individual’s rights with respect to the information and how the individual may exercise these rights or complain to the covered entity.
- The covered entity’s legal duties with respect to the information.
- Whom the individuals can contact for further information about the covered entity’s privacy policies.

There are a number of specific requirements about the notice of privacy practices and these are available online.²⁸

Each provider and health plan is supplying the patient with a notice of privacy practices already. When a privacy standard (opt-in, opt-out, no-option) has been selected, the simplest way to communicate that is through the notice of privacy practices which patients must review and affirm the review by signature the first time they visit a new provider or when the notice is changed (which it will be) and which is required to be prominently posted in provider offices. In the absence of HIE, each provider develops its own notice of privacy practices. With HIE, the group of providers exchange information need to have either a common notice of privacy practices or, at least, compatible notices, so that data is treated consistently across the community. A tricky part of this is assuring that each provider uses the common notice or a consistent one.

²⁷ Ibid.

²⁸ US Department of Health & Human Services, Health Information Privacy, Notice of Privacy Practices for Protected Health Information, at <http://www.hhs.gov/ocr/privacy/hipaa/understanding/coveredentities/notice.html>, accessed Aug 25, 2012.

11 Determine Funding Approach

What's in this section?

11.1 Seed Funding. How to arrange for initial funding.

11.2 Development Funds. Alternatives for funding infrastructure and interfaces.

11.3 Charging for Services. How to make the HIO sustainable.

One of the most significant hurdles a new HIO faces is funding. Historically, many startup exchanges have been funded by grants only to fail once they were near beginning operations or after a period of initial operations. This section deals with decisions about seed funding, developmental funding and operational charges.

11.1 Select Approach for Seed Funding

There are several sources for funding the initial phase of an exchange, the period during which the organizers are determining details of the operation and soliciting provider organizations to participate.

Dues

If the organizing functions have attracted enough provider participants, the organizer can ask those interested organizations to pay modest dues. The dues schedule in Table 11.1 was used by several startup California organizations:

Table 11.1 Dues Structure

Organization Type	Annual Dues
Hospital System	\$5,000
HealthPlan	\$5,000
Public Health Department	\$3,000
Medical Association, Hospital Association, Clinic System, Other	\$1,000
Critical Access Hospital	\$1,000

These dues are meant to be for the first year because participating organizations are expected to be exchanging data by the second year and paying for those HIO services under a participation agreement. Organizations not yet covered by a participation agreement at the end of a year would pay dues for another year. See Section 3.5 regarding MOUs.

Small Grants

Small seed grants may be available to support initial organizing and some of the costs leading up to operation.

Partner Investments

Several of the strongest HIOs in the country have been begun by providers or IPAs to support their business ambitions. In these, a group of founding organizations capitalized the exchanges to carry them to breakeven. Examples are HealthBridge and Santa Cruz HIE.

Assessment

No one of these approaches is inherently better than another. Dues and partner investments both ask the potential participants to put up some funds and, thus, avoid the potential problem that provider organizations may not appreciate what comes to them at no cost.

11.2 Grants for Developmental Funds

ONC's State HIE Cooperative Agreement Program provides funds to states or State-Designated Entities for the support of health information exchange. The California Health and Human Services Agency and its partnering organization (formerly Cal eConnect, now the California Health eQuality Program (ChEQ) at the Institute for Population Health Improvement, UC Davis) have provided grants to exchanges for HIO startup, infrastructure development, innovation and interfaces. In the past, Cal eConnect also offered grants for implementation of Direct.

Other agencies offer grants that may be applicable. HRSA offers grants to FQHC clinics and health center controlled networks (of clinics). The Blue Shield Foundation has provided grants for safety net integration in California with an HIE component. Other foundations provide grant funds that may be solicited for applicant-designed projects. Each community typically has foundations and organizations that may provide local support for HIO projects. Some granting organizations like the California HealthCare Foundation may support specific HIE-related projects that seek to determine a best practice or solve a particular problem in a way that generates statewide lessons.

11.3 Model for Charging for Services

The simple model for any business is that it must charge enough to recover costs plus a small amount for reserves. As noted in section 8.4, there are three sets of costs associated with exchange:

1. **Implementation costs.** These are one-time costs of setting up or bringing in the HIO function.
2. **Interface costs.** There are two components to interface costs. Fees to EHR vendors for the use of EHR gateways for each interface and payments to staff or consultants to configure the interface. EHR gateways range in cost from about \$6,000 to about \$55,000 each with ambulatory EHR gateways costing around \$10,000 on average and hospital EHR gateways being much more expensive. Typically, hospitals have staff to configure interfaces. Ambulatory providers are less likely to have such sophisticated staff and will need those services from the HIO or from consultants. The ChEQ HIE Ready project and related Buyer's Guide described above seek to add transparency and reduce costs for HIE-to-EHR interfaces.
3. **Services cost.** This is the charge for use of the HIO after it is implemented and interfaces are built. There are in theory a variety of ways for charging for services:
 - a. **Per transaction.** Few exchanges charge per transaction as this discourages use of the service. Once an interface is set up, the marginal cost of greater volume is close to zero.

A provider using a function intensively is more likely to be satisfied than one who uses the function infrequently.

- b. **Subscription.** This is the model normally used. An organization pays a monthly or annual fee for the services it elects to use. Volume is normally involved in that the subscription is for an agreed-upon number of physicians or number of beds. One HIO plans to use average number of occupied beds but most exchanges just use number of active beds or numbers of physicians.²⁹ While payment might be monthly or annually, the commitment sought is generally multiyear, e.g., five years.

Few exchanges post charges for HIE services as there are huge differences in costs between implementing a function like laboratory results in a practice and a medical center. A lab interface might cost a few thousand dollars in a practice and a few hundred thousand dollars in a tertiary referral medical center because of multiple laboratories, paths to various external laboratories, different specialty labs, matching results to orders, various gateway pricing, and the like. It is critically important that a new HIO work with its partner providers to develop a fee schedule that is realistic and also takes into account the complexity of each situation.

The magic in sustainability is in offering value-added services that are useful to subscribers and popular enough to support the base services that the HIO must provide. HealthBridge in Cincinnati has been masterful at doing this for a decade or so.

²⁹Personal communication, HealthHIE Nevada, a unit of HealthInsight, Nov 2011.

12 Select an HIE Service Provider

What's in this section?

- 12.1 **Why “Partner”?** Multi-year or multi-decade arrangement.
- 12.2 **Before Approaching HIE Service Providers.** What you need for HIE Service Providers.
- 12.3 **Narrowing the Field.** RFI or informal data collection? Due diligence.
- 12.4 **RFP & Selection.** Winnowing the list to two offerors. More due diligence.
- 12.5 **Negotiate Agreement.** Pricing, terms, future software and services.

When one thinks of offering exchange services, the first thing that s/he is likely to think about is selecting HIE software. We recommend considering teaming with an existing HIO if possible to avoid the duplicate fixed costs of setup of hardware and software. An alternative is to contract with a vendor of HIE software who provides hosted services, again to avoid having a custom setup of hardware and software. The downside of either approach is that you may have less flexibility in configuration of services than you would with your own implementation.

12.1 Why “Partner?”

The first thing to recognize in going into an arrangement for exchange services is that it is not like buying a car. It is like getting married. You will be together with your HIE service provider partner for years or decades and a need to change partners may be as traumatic as changing spouses. You want to be sure that the arrangement is one with which your community and the board or governing council is relatively comfortable. This has implications for negotiation. One can use tough negotiation in purchasing an automobile because once the deal is done, the buyer can take the car and leave. With exchange, once the deal is done, the working together is just beginning.

12.2 Material Recommended before Approaching HIE Service Providers

One of the relevant factors in contracting for services is determining the service priorities of the HIO. This involves reviewing with the board or governance council the list of services in [Section 8.2](#) and selecting the services desired and a sequence for implementing them. No single vendor or HIO will offer all the services listed as this is a master list of all HIO services offered in the US. The HIO will want to stage the availability of services with the finalist vendors so there is a clear understanding of expectations and that becomes part of the contract with the selected vendor.

The HIO will want to determine for which providers the HIE service provider is to develop interfaces. Many hospitals will want to configure their own interfaces. For other providers, the HIO or the participating providers will contract with the HIE service provider or they can consider having the HIO hire or contract with an individual or small company to provide interface configuration services. See [Section 15.3](#) for more information.

12.3 Narrowing the Field

If one is new to exchange and faced with dozens of vendors all claiming that they are better than sliced bread, the temptation will be to draft a complicated request for proposal (RFP) and send it to all of them. What is another email? The problem with this approach (which the author has used) is that you get responses from about 50% of those to whom you send the RFP. Someone at that vendor office spends about 60 hours responding to your technical and general questions. If you limit the response to 40 pages, the responses with attachments will run to about 200 pages. You then need to abstract and score each proposal received as your board or governing council will not read all the proposals and if they did, would not necessarily understand all the HIE jargon. To do this well is time-consuming. As you might expect, some firms that expect to make millions of dollars on a sale are prone to puff the product, some more than others. It takes very careful analysis of the proposals to determine which ones are authentic and which are lacking but nicely packaged.

RFI or Less

There are two good ways to narrow the field. One is to invite HIOs that might provide you services and which have published or listed rates for services to send you a short summary of their approach, including pricing. The second way is contact vendors which you know directly (or are known directly by a user of their services) to provide quality services and ask for a similar summary. Carefully craft the list of points you want in each response. You might send this to ten or less organizations. When you are contacted by a vendor (and you will be) who says, “You did not send me a request,” you need to be prepared to indicate that you are soliciting responses only from a limited group. Some might call this approach, “using a request for information (RFI) to narrow the field.” We are suggesting an even less formal process, because the better HIOs and vendors are relatively well-known by those with experience with them. If you feel that you do not have that level of experience and do not have a person you trust with that experience, you may desire to use an RFI and send it to a wider set of prospects even though it will add time and expense to evaluation.

Sample RFI

Your RFI or summary request needs to have certain information and request certain information from the vendor or HIO.

Standard Information Provided to the HIE Service Provider

- Description of the HIO
- Number of participants, beds, physicians, transactions envisioned to start
- Joint nondisclosure of terms, pricing
- Response does not commit the HIO
- Limited solicitation to limit forthcoming RFP distribution to 5 to 6 parties (so the HIE service provider sees it is worth responding)
- Goals of the HIO through this solicitation
- Desired response

Requested Information

- List of all users or 10 if more, 5 of oldest, 5 newest, date implementation began
- Contacts at 4 organizations
- Architecture used
- List of services currently provided and which users/exchanges in list use which
- Backlog for implementation
- Several financial questions (% of revenue from grants 2012, inception-to-date, profitability 2012, years of profitability)
- Pricing model
- Selected technical features matrix (to identify more sophisticated functions)
- Response due date and size limitations

See [Appendix J](#) for elements of one sample RFI/RFP.

Evaluate RFI Responses

When the responses have been received, prepare a summary of each. This should be made simple by providing very clear instructions in the RFI so that some sections can be used as they are received. In our experience, less than half of respondents follow *all* the instructions, so some summarization will be required in any event. To the extent that it seems prudent, call several of the references from each HIE service provider, selecting those for whom you did not receive contact information. Present the summaries (and the responses) to a team from the board or governing council and discuss the pros and cons of the responses. Select 5 to 6 vendors/HIOs to receive the RFP.

12.4 Use RFP to Make Selection

A more extensive list of questions will be supplied for the full RFP. The standard information provided will be the same. The requested information will be more detailed.

Requested Information

In addition to the information solicited through the RFI (which will only be requested again if the first response was inadequate), add the following:

- Detailed content of proposal guide
- Proposed approach to providing requested services
- Qualifications of organization
- Management plan, staffing and workload (schedule)
- Name and qualification of staff bid to provide services
- Financials (audited and YTD)
- More detailed information on pricing (based on questions about pricing provided in RFI)
- Payment terms
- Description of service level agreement
- Arrangements if HIE service provider (bidder) fails (software in escrow, data owned by HIO, etc.)
- Detailed technical features matrix (substantially more detailed)

Evaluate Responses to RFP

Use the same process as in the first round. Summarize each proposal. Call additional references, with contacts and without. Document comments of references. Use the same evaluation team from the board or governing council to determine the top three candidates. At this point, there may be some clarity among the three. Is one substantially above the others or would any be satisfactory?

Demonstrations

Schedule each HIE service provider to demonstrate its system. Schedule all presentations the same day at the same site. Provide each HIE service provider with the same scenarios to demonstrate. The entire board or governing council should be invited and the evaluation team must participate. At the end of the demonstrations, rank the candidates 1, 2 and 3.

Site Visits

Schedule a site visit to clients of each of the top two candidates or to one candidate if it is substantially stronger. Arrange time for the HIE service provider to show you the site and time with the customer without the HIE service provider present. Re-rank the candidates.

12.5 Negotiate Agreement

Begin contract negotiation with the preferred candidate. If there is little difference in ranking, consider negotiating with the top two as an impasse or concern may arise with one and having a backup may be valuable. Graciously continue to press for concessions on price and terms of value to the HIO.

Determine what the HIE service provider seems to value and attempt to give that to them in consideration for changes you desire. Closure on negotiation is often difficult so attempt to structure the situation to have a closing date. Both sides can use this for brinksmanship so try to keep progress cordial but in motion. If the board or governing council wishes legal review, limit the review to business terms, not wordsmithing the document.

One factor to carefully address is what of the HIE service provider's offerings are included in the agreement. Some HIOs have contracted with vendors for HIE software and then found that some features of the system are not included in the base agreement. You also want to address whether new system capabilities are included or will be separate-cost items.

It is crucial that the HIO is negotiating provider participation agreements in parallel with selection of exchange services and that many if not all of these be executed in time to have funding available for contracting with the vendor. See Section 14 which follows.

13 Develop Final Budget

What's in this section?

13.1 Why Wait Until Now for Final Budget? Need final agreement with HIE service provider.

13.2 Model Budget. What will the budget look like?

13.1 Why Wait Until Now?

The first logical question is, “Why wait so long to develop a final budget?” The response is that one does not know the actual cost of the HIE services until the contract negotiation with the HIE service provider is executed. This will be a large element of the cost of HIO services. The organizer(s) and board or governing council will have determined as the pricing emerges how they prefer to allocate it generally but will not know exactly until the contract is executed. This means that the drafts of the final budget will need to have some contingency funding built in so that the participation agreements can be executed in advance of the signing of the HIE services budget. There can be an understanding that excess funds can be carried forward or used for support of interfaces.

13.2 Model Budget

The actual HIO organization budget will look like the budget of any operating entity. A revenue section will show income from contributions to startup, fees for interface development (if the HIO provides those services), and fees for the actual HIO services. The cost section will show staffing, fringe benefits, consultants, legal services, supplies, rent, miscellaneous, and payments to the HIO service provider. Net income will be the difference. Two fairly simple model budgets are shown in [Appendix I](#) referenced previously. Note that the final budget may not look different than a preliminary budget. In the final budget, the HIE service provider pricing and the staffing will reflect the executed contract.

14 Obtain Participation Agreements

What's in this section?

14.1 Schedule Strategically. Identify first movers to start.

14.2 Right Participants. Use committed board members to approach others.

14.1 Schedule Strategically

Getting organizations to sign off on expensive endeavors that only work if all agree to sign is tenuous. One needs to identify the leaders who are willing to be first movers and get them to execute participation agreements about six months before the execution of the HIE vendor services agreement. The objective is to get all or most participation agreements executed by the time the HIE service provider signs so that funds will be available to begin HIO setup and services.

14.2 Right Participants

Your board or governing council will have one or several members who have access to the decision makers in the community, the executives who must sign for each provider organization. That person or persons need to be the leads for getting participation agreements signed. Many of these efforts may require substantial time and repeated or extended discussions. This process will be greatly facilitated if the staff of these provider organizations who are on the board or governing council will have (1) budgeted the HIO costs and (2) kept the CEO informed about progress in exchange and made the case well that exchange is crucial to the organization.

15 Implement Exchange

What's in this section?

- 15.1 **Determine Phase 1 Organizations.** Select a subregion with enthused providers.
- 15.2 **Vendor/HIO Configures for Phase 1.** Plan to help HIE service provider prepare timely.
- 15.3 **Configure Interfaces.** Work with board/governing council to plan for interface development with or around the HIE service provider.
- 15.4 **Commence Phase 1.** Begin exchange in selected subregion.
- 15.5 **Add Remaining Providers.** Bring on successive groups of providers in stages.

When the agreement is executed with the HIO services provider, one would think that you can begin transmitting and receiving healthcare data. In fact, that is the beginning of a process.

15.1 Determine Phase 1 Organizations

You will want to consider which provider organizations participating in the HIO will want to be first to implement exchange with the selected HIE service provider. It is reasonable to assume that the Phase 1 organizations will already be involved in some exchange such as receiving laboratory results electronically or even working with another HIO if the market contains more than one supplier of HIE services. An ideal Phase 1 configuration will be

- Several hospitals
- Medical groups, IPAs, community clinics referring patients to those hospital(s)
- All these parties having signed participation agreements and DURSAs

This initial implementation specification will allow this first group of providers to fully exchange information and assure that the HIO is properly configured and working for the community.

15.2 Vendor/HIO Configures HIE Services for Phase 1

Shortly after the agreement is executed with the HIE service provider, the HIE service provider will begin setup of the HIO configuration for the community, with a focus on the organizations in the initial phase. Even though the HIE service providers proposal and, probably, the contract, will identify specific named staff to support technical services for the HIO, the HIE service provider typically has to arrange to free up that staff or hire additional staff. This may impose a slow startup. With the intense desire of communities across the US and in some other countries to share health information electronically, the HIE service provider is likely to be stretched for staffing. One might think that the HIO could contract around this scarcity. The HIO should facilitate the startup with the HIE service provider.

15.3 Configuring Interfaces

A significant part of preparing for exchange of health information is configuring interfaces. The HIE service provider will do the configuration at the HIO end of the communication but the hospital, the practice, the department of health and human services or the community clinic will be responsible for the configuration at the provider end of the exchange. Depending on the package of services negotiated with the HIE service provider, some provider-end services may be included. Many HIOs begin

functioning with a vendor product and gradually move to an open-source platform like Mirth for some exchange functions, particularly for interface development. We suggest that the new HIO consider the option of hiring an interface engineer or contract with a consultant to configure interfaces and provide (sell) that service to participating providers at a low rate (full cost plus a small overhead contribution). This may provide the resource faster than the HIE service provider can supply it and probably at substantially lower cost.

15.4 Commence Phase 1

The HIE service provider will implement selected HIO services with a focus on the initial providers. We recommend running the Phase 1 implementation for four months before expanding to additional providers. This will allow a sufficient trial of the configuration to determine any modifications needed and any additional services that are desirable from the beginning for providers added in follow-on phases.

15.5 Add Remaining Providers in Groups

After the Phase 1 implementation is complete and lessons learned have been used to refine the configuration and add new functionality, the next expansion can be scheduled. We recommend at least three months for each expansion to allow time for adjustment to be made before beginning the next expansion. The number of iterations will depend on the readiness of the providers to proceed and the number configured together in each implementation group.

16 Conclusions

What's in this section?

16.1 Stakeholder Engagement. Bringing the stakeholders to the table and working constructively with them.

16.2 Know the Territory. Learn everything possible about the service area.

16.3 Governance. Effectively organize the HIO governing entity.

16.4 Business Plan and Budget. A sound business plan and budget are essential.

16.5 Participation Agreement, DURSA, Policies and Procedures, Privacy and Security. These documents memorialize meeting of the minds and the way the providers wish the HIO to operate. Plan that it will take time to get them executed.

16.6 Funding. Have a sequential plan for steps in developing funding and a plan B.

16.7 HIE Service Provider. Seek an HIE service provider partner for the long term.

16.8 Implementation. Realize that implementation of HIE is a journey, not a point-in-time. The HIO should be lean but it needs to assure adequate support to provider users (including health plans).

What are the key elements of developing a sustainable HIO?

16.1 Stakeholder Engagement

Bringing the stakeholders to the table and working constructively with them is the first step and is essential.

16.2 Knowing the Territory

Like the Music Man, you have to know the territory, the demographics, the constituents including the major players, the smaller organizations, the safety net and special populations like Native Americans. You need to know the EHR and some administrative systems used by the parties and their current and planned health information exchange activities.

16.3 Governance

It is important that you effectively organize the HIO operation either as a unit of an existing organization or a new entity. The structure of the board or of the governing council is crucial as poor structure may produce an ungovernable entity. Board or governing council size needs to be limited and the method of filling vacant board seats needs to be managed so that the board can be maintained as a thoughtful group of healthcare and business-savvy individuals.

16.4 Business Plan and Budgets

A business that has no business plan is at risk. We all are familiar with the frequency of rebudgeting in major organizations – two or three times per year is typical. The exchange needs to develop a business plan and schedule of activities and a supporting budget early in its development and to refine this as additional information on costs becomes available and as plans are refined.

16.5 Participation Agreement, DURSA, Policies and Procedures, Privacy and Security

The documents that the participants sign or adopt memorialize meetings of the minds and the way that the providers wish the HIO to operate. These also embody compliance of the HIO and its parties with legal and regulatory requirement of the environment. The HIO must realize that developing these documents is important but working with the providers in the service area to commit to exchange by signing is essential. Getting the providers to budget for HIE is a step. Identifying first-mover providers who will sign first is another step. Allowing six months or so for the wooing and signing process is another step.

16.6 Funding

The HIO requires a certain level of funding to operate. This funding can come from grants from various sources for planning and infrastructure but grant funding should not be used, even if available, for HIE services as that may create a climate where free services are adopted and when the grant funds are gone, there is not the will to pay for the services. If providers will not pay for the services, either they do not understand their value or the services are not adequately useful to them.

16.7 HIE Service Provider

In the long run, the HIO will be providing HIE services through its HIE service provider partner. The relationship with the HIE service provider will be for years and, if successful, for decades. Selection of this partner is the major technical and strategic decision of the new HIO. When you purchase an automobile, upon delivery the relationship with the seller is over. With HIE, when the agreement is signed, the relationship is just beginning.

16.8 Implementation

Implementation of HIE is a journey, not a point-in-time. There will be a Phase 1 with a group of providers followed by a phased implementation of other groups of providers. Once those steps are complete, there will be additional functions to be added. Stage 2 meaningful use will be followed by stage 3, 4, The HIO needs to coordinate or manage these processes and, potentially, provide or link the providers to configuration and perhaps other services. The ambition is that the HIO be lean but it needs to assure that adequate support is available to provider users.

For many provider organizations, this will be the exciting fulfillment of the long-visible but out-of-reach goal of available electronic patient information when it is needed, where it is needed, by the providers who require it in a form that is immediately usable. You are contributing to a revolution in patient care that is finally being delivered. It will not be complete when the HIO is functioning but it will be tangibly underway.

Appendix A - Charter for an Exchange

Care Connect³⁰ Charter

This document defines the principles, functions and organization of Care Connect. The mission and goals of Care Connect are as follows:

Mission

The mission of Care Connect is to promote a continuum of patient care among providers and enhance the cost-effectiveness of this care through development of a Regional Integrated Health Information Exchange entity which will develop a community plan and contract for HIE services. This HIO will satisfy the four “rights”: connect providers within the region such that the right data (what is relevant but not excessive) is available for the right patient (highly accurate patient identification) at the right time (immediately when needed) at the point of care (the right place).

Goals

The *initial* goal of Care Connect is for the constituents to develop an integrated plan for accomplishing data exchange. Health-related organizations will be part of the planning so that data from behavioral health, public health, school health, home health care, criminal health, eligibility systems for various programs and a number of other stakeholder organizations are part of HIO plan. The HIE program needs to be designed to be sustainable absent grant funds. Care Connect should utilize grant funds to pay for startup and development costs but not for the cost of provider services. The user benefit needs to be such that the user is willing to pay for services. That said, Care Connect will seek and use grant funding for some of the costs of establishing a leading regional program.

Principles

- All participants are valued.
- The board of Care Connect must be representative but not huge as size is an impediment.
- Care Connect will represent the community and find solutions that fit the community, whether incentivized by ARRA or not.
- There will be a bias for accomplishment, not deliberation.
- Care Connect will become financially self-sustaining by providing valued services.

Functions

The principal functions of Care Connect are the following:

1. **Community HIE plan.** Develop and periodically update a community plan for integrated HIE.

³⁰ Not an actual HIO.

2. **Service definitions.** Define minimum Core Foundation Services and Premium Value-Added (optional) Services.
3. **Contract for services.** Seek a contracted relationship with a regional HIE(s) or with a vendor of HIE services to provide a nearly-immediate set of classical HIE user functions.
 - **Foundation services.** Functions to manage the HIE itself such as master patient index, record locator, provider and entity directories, etc.
 - **Transaction services.** Interfaces from EHRs to the HIE and from the HIE to EHRs.
 - **Application services.** These support consent management, clinical messaging, gateways to eHealth Exchange (formerly NwHIN), public health, etc.
 - **Specialty (premium) services.** These are optional and are potential revenue sources: physician EMR lite, ePrescribing, practice management, personal health record, disease registries, dictation services, etc.
 - **Clinical data and workflow.** These are functions related to clinical reports and management of patients. Examples are medication summaries and referrals and authorizations.
 - **Data warehouse and analytics.** These functions include clinical management aids such as disease management and clinical decision support and analytical data for insurance, regional public health studies, etc.
 - **Data accessibility.** These functions include a patient community longitudinal care record and financial and administrative services related to credentialing, billing, remittance advices, etc.

No one HIE or HIE vendor is expected to offer all services that are available somewhere under each of the above categories. A mature HIE service provider will offer a spectrum of services allowing Care Connect to quickly impact care in the community.

4. **Privacy and security.** Assure patient privacy and security are protected.

Organization

Care Connect will be a 501c3 not-for-profit organization governed by a community board. The board will be drawn from participating organizations in the HIE and will be structured to allow representation by organization type and by professional experience of the board members. The initial board includes the following founding constituencies:

- Hospital Systems & Hospitals
- Medical Societies
- Departments of Health and Human Services including Behavioral Health/Substance Abuse
- Community and Rural Health Clinic Systems
- Health Plans

Because Care Connect and, thus, the board, need to represent health and health-related organizations in the community, a large number of additional constituencies need to be represented on the board (Social Services, Rehabilitation Hospitals, School Health Programs, Long-Term Care Facilities, Eligibility-Determining Organizations, Prisons/Jails, Agency on Aging, Visiting Nurse Association, Hospice Programs, Universities and Community Colleges, Veterans Administration Facilities, Pharmacies, Indian Tribes and Associations dealing with health issues). One of the early organizing challenges will be to work with board structure to gain representation of all constituencies while keeping board size reasonable. We will draw on the experience of several stakeholders who have dealt with this well.

Appendix B – MOU

Memorandum of Understanding Intent to Participate in Care Connect

This document is a Memorandum of Understanding (“MOU”) between Care Connect , a California not-for-profit organization applying for 501(c)(3) status, and _XYZ Hospital System_ (“Participant”), a _____ organization/corporation, that desires to participate in Care Connect’s regional HIE planning and contracting project for the Service Area.

Definitions

Care Connect. Care Connect is a group of individuals from provider and related organizations forming a 501(c)(3) organization to arrange for HIO services for the Service Area.

Service Area. The Service Area is the group of counties for which Care Connect will provide services. The counties initially comprising the Service Area are A, B, C and D but the scope of the area in which Care Connect provides services is open to change depending upon the interests of participating providers and, when formed, the organization’s Board of Directors.

Governance. The Board of Directors of Care Connect will be responsible for governance of the activities performed under this Memorandum, in close consultation with senior management and the Board of the Responsible Medical Society³¹, the incubator of Care Connect.

Provisions

Participation. As a Participating Organization in Care Connect, Participant will

- **Policy determination.** Have a voice in determining the approach taken by Care Connect to establishing community HIE. The Participant is asked to designate a representative to the Governing Council initially and to the board or a representative delegation advising the board when the board is constituted.
- **Priority for HIE services.** Have a priority position based on being a founding Participant to participate in HIO activities of Care Connect, realizing that HIE services will necessarily be provided at a cost anticipated to be a periodic subscription fee for services selected.
- **Annual dues.** Pay initial annual dues based on the then-current dues schedule (Attachment A) for the provider type. Once Participant signs a Participation Agreement for HIE services and subscription fees are begun for services, it is anticipated that dues will no longer be required. If a Participant has not begun services on the annual anniversary of this MOU and subscription for use of services is not imminent, renewal dues will be required.

³¹ Not a real medical society.

Governance. Each Participant will have a seat on the initial Governing Council, the entity serving as the interim board, and will be part of the process for determining board representation that will apply when the Secretary of State has approved and returned the Care Connect application for formation of a not-for-profit incorporation.

Term. The term of this MOU is annual beginning on the date of the Participant’s signature below. It automatically renews unless terminated.

Termination. A Participant may terminate this MOU at any time with 30-days prior written notice. There will be no financial settlement associated with early termination. Care Connect may terminate this MOU with Participant by 60 days prior written notice and, at Care Connect’s option, may return the pro rata unused dues.

Indemnification and Insurance. Each party agrees to hold harmless and indemnify the other party for any and all claims arising out of any injury, disability or death due to gross negligence of its staff. Each party agrees to carry its own general liability, D&O and other insurance.

Patient Information. This MOU does not anticipate the sharing of patient information under this MOU but rather under a Participation Agreement. If it becomes appropriate to share information under this MOU, the parties agree to execute a Business Associate Agreement.

Disputes. Any dispute under this MOU will be referred to the Governing Council or the Board for settlement. The Participation Agreement for HIE services will have a contract dispute resolution provision.

By

XYZ Hospital System

Care Connect

Name, Title

_____, Project Manager

Effective date: _____

Appendix C – Form for Hospital System Data

Hospital / Health System Survey

This survey was developed for an online survey tool called Survey Gizmo. Survey Monkey is similar. Data in question category 2 could be obtained from OSHPD but questionnaire responses may be more current. The Q# format is used by the online survey tool.

1. Demographics

The purpose of this questionnaire is to allow us as to build a foundation of knowledge about the service area participants so that we can address the real needs of the participants intelligently. There are two surveys. This is the hospital / hospital system survey. There is a second survey for providers / provider groups.

Q1: First Name

Q2: Last Name

Q3: Organization

Q4: Date survey completed

Q5: eMail Address

Q6: Telephone

2. Hospital System Information

Q7: Number of facilities

Q8: Number of total beds

Q9: Number of acute beds

Q10: Number of skilled nursing beds

Q11: Number of long-term beds

3. Key Hospital Information Systems

Q12: Please indicate the Vendor and Product (System Name) for each of the following hospital systems.

System Type	Vendor Name	Product (System Name)
Hospital Information System (HIS)		
Laboratory Information System (LIS)		
Radiology Information System (RIS)		
Radiology Image System (PACS)		
Pharmacy Information System		
Electronic Health Record (EHR)		
Integration Engine or Translator		

4. Current Hospital Data Exchange

Q13: Please indicate the operational electronic data flows between your organization and other organizations

Electronic Data Flows	Inbound	Outbound
Laboratory Results		
Laboratory Orders		
Radiology Results		
Radiology Orders		
Radiology Images		
ePrescribing		
Pharmacy Link to Surescripts		
Transcriptions		
NwHIN Link		

Q14: Does the hospital /hospital system allow providers read-only viewing of hospital data?

Read-Only Viewing	Inbound	Outbound
Laboratory Results		
Radiology Results		
Prescriptions		
Transcriptions		
Medical Record		
Orders		
Other Data (if so, what?)		

Q: In the prior question, if the hospital / hospital system provides viewing of Other Data, what data is that?

Q15: Does the hospital / hospital system allow providers to download viewed data (prior two questions)?

Allows Data Downloading	Yes	No
Laboratory Results		
Radiology Results		
Prescriptions		
Transcriptions		
Medical Record		
Orders		
Other Data (if so, what?)		

Q: In the prior question, if the hospital / hospital system allows downloading of Other Data, what data is that?

Q16: What are the current budgeted initiatives in health information exchange (HIE)?

Data Exchange	Yes	No
Laboratory		
Radiology		
Pharmacy		
Transcription		
CCD		
Orders		
Immunizations		
Public Health Lab Reporting		
Syndromic Surveillance		
Other (if so, what?)		

Q: In the prior question, if "Other," what are the other HIE projects?

5. Data Processing and Laboratory

Q17: Is your hospital / hospital system data processing resident at your facility or remote?

Q18: On what hardware do your principal systems operate?

Q19: If the hospital / hospital system utilizes telemedicine or provides support to other settings via telemedicine, please indicate for what functions.

Q20: When patients are transferred to other hospitals, what are the principal hospitals and reasons?

Hospital Receiving Patient	Service(s) Sought at Receiving Hospital

6. EHR and Meaningful Use

Q21: If you have no operational EHR: [conditional questions below]

Q22: Is implementing an EHR a priority for the board of directors?

Yes	No
-----	----

Q23: Does your hospital / hospital system have a plan for achieving meaningful use?

By October 2013	By October 2014	No
-----------------	-----------------	----

Q24: Is the meaningful use plan currently budgeted?

Yes, budgeted	Partially budgeted	Not budgeted
---------------	--------------------	--------------

7. Feedback

Q25: Please indicate anything we should understand in helping you to establish health information exchange in the service area.

8. Thank you!

Q: Thank you for responding to this survey. Your response will help us understand the status of hospitals and health systems with respect to HIE at the outset of this project.

Appendix D – Form for Medical Practice Data

Physician / Medical Group Survey

This survey was developed for an online survey tool called Survey Gizmo. Survey Monkey is similar. The Q# format is used by the online survey tool.

1. Demographics

Q: The purpose of this questionnaire is to allow us as to build a foundation of knowledge about the service area participants so that we can address the real needs of the participants intelligently. There are two surveys. This is the provider survey. There is a second survey for hospitals.

Q1: First Name

Q2: Last Name

Q3: Organization

Q4: Date survey completed

Q5: eMail Address

Q6: Telephone

2. Provider Organization

Q: In this survey, we use the term “practice” to mean medical group, IPA, clinic or provider.

Q7: How is your medical practice organized?

Medical Group	IPA	Clinic	Provider	Other
---------------	-----	--------	----------	-------

Q8: If “Other” in above question, please explain.

Q9: Please indicate the number of providers by specialty in your organization. Please indicate on separate lines the number of NPs, PAs, and other midlevels.

Provider Type	Number in Organization

3. Names of Key Information Systems in Practice

Q10: Please indicate the Vendor and Product (System Name) for each of the following systems.

System Type	Vendor Name	Product (System Name)
Practice Management System (PMS)		
Laboratory Information System (LIS)		
Radiology Information System (RIS)		
Radiology Image System (PACS)		
ePrescribing System (eRx)		
Electronic Health Record (EHR)		
Integration Engine or Translator		

4. Current Practice Data Exchange

Q11: Please indicate the operational electronic data flows between your organization and other organizations

Electronic Data Flows	Inbound	Outbound
Laboratory Results		
Laboratory Orders		
Radiology Results		
Radiology Orders		
Radiology Images		
ePrescribing		
Pharmacy Link to Surescripts		
Transcriptions		
NwHIN Link		

Q12: Does the practice allow providers read-only viewing of practice data?

Read-Only Viewing	Inbound	Outbound
Laboratory Results		
Radiology Results		
Prescriptions		
Transcriptions		

Medical Record		
Orders		
Utilization Management Data		
Other Data (if so, what?)		

Q13: In the prior question, if the hospital / hospital system provides viewing of Other Data, what data is that?

Q14: Does the practice allow providers to download viewed data (prior two questions)?

Allows Data Downloading	Yes	No
Laboratory Results		
Radiology Results		
Prescriptions		
Transcriptions		
Medical Record		
Orders		
Utilization Management Data		
Other Data (if so, what?)		

Q15: In the prior question, if the practice allows downloading of Other Data, what data is that?

Q16: What are the current budgeted initiatives in health information exchange (HIE)?

Data Exchange	Yes	No
Laboratory		
Radiology		
Pharmacy		
Transcription		
CCD		
Orders		
Immunizations		
Public Health Lab Reporting		
Syndromic Surveillance		
Other (if so, what?)		

Q17: In the prior question, if "Other," what are the other HIE projects?

5. Data Processing and Laboratory

Q18: Is your practice data processing resident at your facility or remote?

Q19: On what hardware do your principal systems operate?

Q20: If the practice utilizes telemedicine or provides support to other settings via telemedicine, please indicate for what functions.

Q21: When patients are hospitalized, what hospitals are principally used?

Hospitals Utilized	Volume of Patients Hospitalized per Year

6. EHR and Meaningful Use

Q22: If you have no operational EHR: [conditional questions below]

Q23: Is implementing an EHR a priority for the leadership of the practice?

Yes	No
-----	----

Q24: Does your practice have a plan for achieving meaningful use?

By December 2013	By December 2014	No
------------------	------------------	----

Q25: Is the meaningful use plan currently budgeted?

Yes, budgeted	Partially budgeted	Not budgeted
---------------	--------------------	--------------

7. Feedback

Q26: Please indicate anything we should understand in helping you to help health information exchange work in the service area.

8. Thank you!

Q: Thank you for responding to this survey. Your response will help us understand the status of medical groups, IPAs, clinics and providers with respect to HIE at the outset of this project.

Appendix E – Agreement with Incubating Entity

Memorandum of Understanding With Reliable Medical Society for Incubating Care Connect³²

Definitions

Care Connect. Care Connect (working name) is a group of individuals from provider and related organizations seeking to form a 501(c)(3) organization to provide or arrange for health information exchange services for the Care Connect Service Area.

Incubating Entity. Reliable Medical Society is a California not-for-profit 501(c)(3) corporation.

Service Area. The Service Area is the group of counties for which Care Connect will provide services under this Memorandum of Understanding (“MOU”). The counties initially comprising the Service Area are Solano, Napa, Yolo and Sonoma but the scope of the area in which Care Connect provides services is open to change depending upon the interests of participating providers and, when formed, the organization’s Board of Directors.

Governance. The Board of Directors of Care Connect will be responsible for governance of the activities performed by Care Connect under this Memorandum, in close consultation with senior management and the Board of the Reliable Medical Society.

Provisions

1. **Relationship of Incubating Entity to Care Connect.** Care Connect desires to function as a not-for-profit organization from inception until it receives its formal not-for-profit designation. Reliable Medical Society and Care Connect desire to enter into this MOU to allow Reliable Medical Society to work in close conjunction with Care Connect in managing its financial affairs pending its receipt of formal not-for-profit designation.

2. **Financial services.** Under the terms of this MOU, Care Connect is contracting with Reliable Medical Society to provide assistance to Care Connect with managing the finances of Care Connect according to the attached Financial Policy and Procedure. Care Connect will retain ultimate responsibility for its financial matters.

3. **Insurance.** Care Connect will maintain general liability and officers and directors insurance policies with adequate coverage limits. Reliable Medical Society will not cover the activities of Care

³² Fictional organizations.

Connect under its insurance.

4. **Legal entity.** Within 30 days of execution of this MOU, Care Connect will select a board of directors and file to set up a corporation which will submit appropriate registrations and applications for not-for-profit designation as indicated in Section 6 below.

5. **Bank account.** Once the legal entity is established, Care Connect will set up a not-for-profit account at Charles Schwab with Care Connect having sole signatory authority, which authority shall be exercised in conformity with the provisions of the attached Financial Policy and Procedure.

6. **Not-for-profit designation.** Within approximately 120 days after incorporation, Care Connect will submit an application to the Internal Revenue Service for designation as a 501c3 not-for-profit corporation.

7. **Term of incubation.** The term of this MOU is anticipated to be no longer than the period from its date of execution to the date which constitutes receipt of not-for-profit designation plus 6 months. The parties agree that the financial services arrangements included in this MOU may be extended by mutual consent based upon terms negotiated at the time of extension. Either party may terminate this MOU without cause with 30 days prior written notice. If this MOU is determined in writing by any governmental entity having proper regulatory authority over its subject matter to violate any applicable laws or regulations, it is subject to immediate termination by written notice from either party to the other.

8. **Fee.** The fee for services provided by Reliable Medical Society under this MOU will be 7.5% of deposits.

9. **Signature in counterparts.** This MOU may be executed in counterparts, all of which taken together shall be deemed to be one MOU.

Reliable Medical Society

Care Connect

_____, CEO

_____, Organizer

All other organizers sign below.

Financial Policy and Procedure

Date 3/30/12, Revised 4/28/12.

1. **Funds received.** All funds received by Care Connect will be provided to the Reliable Medical Society for deposit to the Care Connect account or a process will be developed to notify the Reliable Medical Society of any deposit. (The Reliable Medical Society will have online access to the Care Connect account so it can see all transactions when they are consummated.)
2. **Expenditures.** Care Connect will provide a budget to Reliable Medical Society for expenditures against the account. The Care Connect authorized check-signer will only draw checks for expenditures in the budget or expenditures approved by the Care Connect governing Board after consultation with and concurrence by Reliable Medical Society. An expenditure will only be authorized if sufficient cash is on hand to fully cover it. Reliable Medical Society is not authorized to cover any expenditure that is not fully funded.
3. **Accounting.** Reliable Medical Society will provide Care Connect a monthly accounting for Care Connect transactions on a schedule which is convenient for Reliable Medical Society.

Appendix F - Technical Summary of Exchange

This appendix provides a more detailed view of the material presented in Section 6 of the Toolkit. Some material is repeated so that this appendix will be a complete view of the technical functioning of exchange.

This section discusses some of the technical features of exchange in lay language.

F.1 Master Patient Index

Your HIO serves a community. It is important to be able to determine which medical data belong to which patient. The HIO requires a Master Patient Index to match the records of each patient across providers because each provider uses a different patient ID number.

The base functionality of master patient index (MPI) is a relatively simple. Several fields for each patient are used to achieve the best match. Typically used fields include last name, date of birth, an available legally used ID number such as Medi-Cal number³³, address, telephone, and first name. Different algorithms use less than or more than all of these. The algorithms apply weights to each factor in the matching process. Some systems use Soundex or a similar system to account for the fact that the same name may be spelled differently or misspelled so that a match by sound is more accurate than a match by letters. Some names have a number of spellings. Muhammad is the potentially the best example. It is the most common given name in the world applying to more than 150 million men and boys.³⁴ There are more than a dozen common English spellings of that name and any spelling of Mohamed is as good as any other since only the Arabic is correct. The reason that MPI systems are often quite expensive (up to \$200,000 and more) is that the systems may contain many subsidiary analysis functions to help resolve differences.

Matching of the patient data is substantially enhanced if the data are properly prepared. Best practices include data cleaning (removing punctuation in names and removing non-alphabetic data), data standardization (remove difference in upper and lower case, map nicknames to standard names, use the U.S. Postal Service address service to put addresses in standard form), putting names in phonetic form (Soundex) and other processes. The matching may be required to make some exact matches among factors (e.g., last name, gender). Once the initial matches are made, a set of factors may be applied to

³³It is no longer legal to use social security number in contexts in which the number might be observed by another person and used for identity theft, e.g., on patient insurance ID cards.

³⁴Columbia Encyclopedia, Encyclopedia Britannica, retrieved July 7, 2008, from Wikipedia, http://en.wikipedia.org/wiki/Muhammad_%28name%29, accessed July 26, 2012.

emaining candidate near-matches to determine the most likely matches. Manual intervention may be required for those persons not matched by the process.³⁵

F.2 Record Locator Service

The record locator service contacts the available directories, identifies the locations of records for the subject patient and provides that information to the HIO so that it can retrieve the relevant records.

The record locator service includes these distinct functions:³⁶

Manage participating provider identities.

- Maintain and publish a patient index.
- Match patients using an algorithm.
- Look up patient record locations (but not the records themselves).
- Communicate securely and maintain an audit log.
- Manage patient consent to record sharing (under state laws and ARRA).

Note that the exchange of the identified patient records is part of the clinical data exchange and not of the record locator service. Note also that the matching process (MPI) is considered to be part of the RLS. This was the model originally proposed by the Markle Foundation Connecting for Health Common Framework, following the design of Massachusetts SHARE.³⁷

Originally, a provider MPI would have been needed to identify providers but the advent of the National Provider Identifier (NPI) in the latter half of 2008 negates that requirement.

F.3 Integration Engine

This is a tool variously called an integration engine, an interface engine or a translator. A number of vendors supply these tools and there is at least one open-source version. The basic function of the interface engine is to bring in a transaction in a certain format, remap and often translate certain fields either to different locations in the record or to different coding schemes, and produce an output record that can be read by the receiving system.

F.4 Use of Exchange System Components

In theory, one could purchase components of these core exchange services and integrate them: MPI, RLS and integration engine, but that would make sense only if integrated systems were not available in the market. Most hospital EHR systems have an accompanying integration engine for configuring transactions entering or leaving the hospital systems. For ambulatory EHRs, many providers do not have

³⁵This paragraph is a quote from HIMSS HIE Wiki, HIE Technology, ed Holly Gaebel, 2011, from The HIMSS Guide to Participating in a Health Information Exchange, of which Lyman Dennis is a coauthor. <https://himsshie.pbworks.com/w/page/34623905/HIE%20Technology>, accessed Aug 26, 2012.

³⁶Ibid, but not quoted.

³⁷Markle Common Framework, see Technology Guides T2 Health Information Exchange: Architecture Implementation Guide and T6 Record Locator Service: Technical Background from the Massachusetts Prototype Community, <http://www.markle.org/health/markle-common-framework/connecting-professionals>, accessed Aug 26, 2012.

the skilled staff required to configure transactions and either contract for configuration services as needed or use a clearing house.

F.5 Healthway eHealthExchange and Direct

Providers and exchanges can be connected across the country using the Healthway eHealth Exchange. The eHealth Exchange is a set of standards, services and policies that enable the secure exchange of health information over the Internet. Currently, several government agencies and private HIEs use this standards architecture to exchange health information. These include the Department of Defense, the Veterans Administration, and the Social Security Administration.

CONNECT is free open-source software developed by a group of federal agencies to share information through the use of Healthway standards, services and policies. CONNECT can be used to set up query-based exchange within an organization but its main use to date has been to link federal agencies, HIEs, integrated delivery systems and other generally larger organizations. As of March 2012, there were 26 participants using eHealth Exchange.³⁸ CONNECT and similar variations of Exchange specifications are becoming a popular means of HIE-HIE exchange in California. Note that an organization may choose to implement CONNECT without onboarding to the Healthway eHealth Exchange.

F.6 Direct Project

The Direct Project was initiated in March 2010 as a secure, easy-to-use replacement for mail and fax transmissions among providers, and between providers and patients, laboratories and public health departments. Direct operates like secure email and can be sent provider-to-provider or through directory functions called HSPs. Early adopters of Direct include the Hennepin County Medical Center in Minneapolis, the Rhode Island Quality Institute, various Direct Project pilots, the Department of Veterans Affairs, Kaiser Permanente, Redwood MedNet, several providers in Connecticut, and a group of providers in Texas. Direct has since become a more widespread transport mechanism that is expected to move a variety of transaction types including CCDs. Most EHRs now have plans to send and receive transactions using the Direct protocol.

Health Information Service Providers (HSPs) provide the directories of provider and other participant secure addresses (like email addresses) and in many cases, encrypt and send and receive Direct messages. California has determined that it will utilize the directory services as specified by the Direct Project with a California-developed Healthcare Provider Directory and will utilize X.506 digital certificates and DNS- and LDAP-based certificate discovery.³⁹

³⁸ National eHealth Collaborative, Health Information Exchange Roadmap: The Landscape and a Path Forward, p. 9

³⁹ The Direct Project, Direct Rules of the Road, <http://wiki.directproject.org/Direct+Rules+of+the+Road>, accessed Aug 26, 2012.

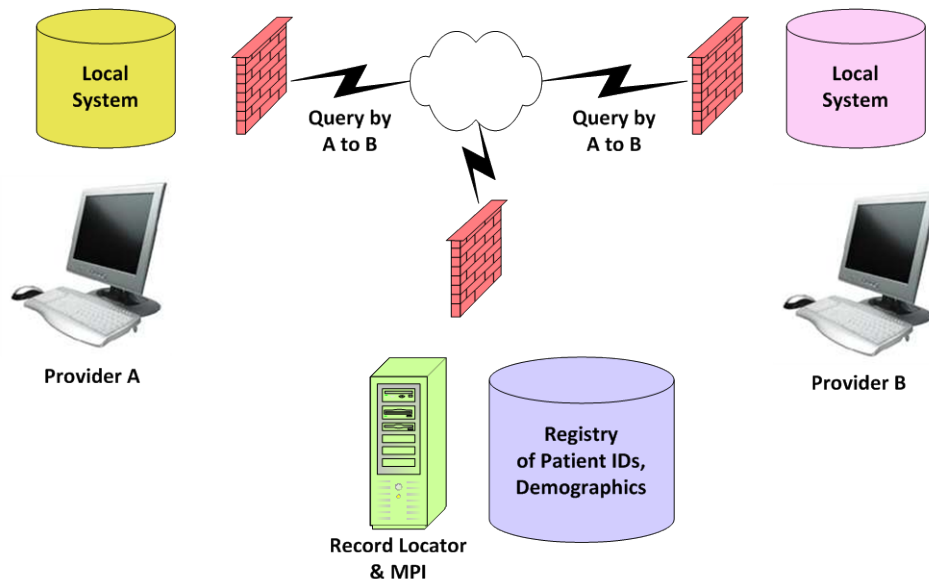
Appendix G – Query Data Exchange Models

This appendix provides a more detailed view of the three models for query data exchange: federated across locations, federated at the HIO and repository.

One of the first worries of providers new to exchange is, “I have to give up my data” or “I will lose control of my data.” The answers are “no” and “no,” with a few caveats. First, let’s ignore the fact that the data is not the providers; the data belongs to the patient. Second, health data exchanges are of three models. One involves pooling of data and the other two do not, or limit pooling. Let’s look at the most restrictive models first and move out to less-restrictive ones.

G1. Federated Model: Data at Provider Sites

If you ask the lead staff of any of the well-known HIOs what model of data sharing they use, they will answer “federated.” Here is what federated looks like:



Key points:

1. All patient data remains on local systems at Provider A and Provider B.
2. When Provider A requests data on his/her patient, the request goes to the HIO (green server) and that determines where data on the patient is located (Provider B) and requests that data.
3. The requested data moves to the HIO (green server) and then to requester.

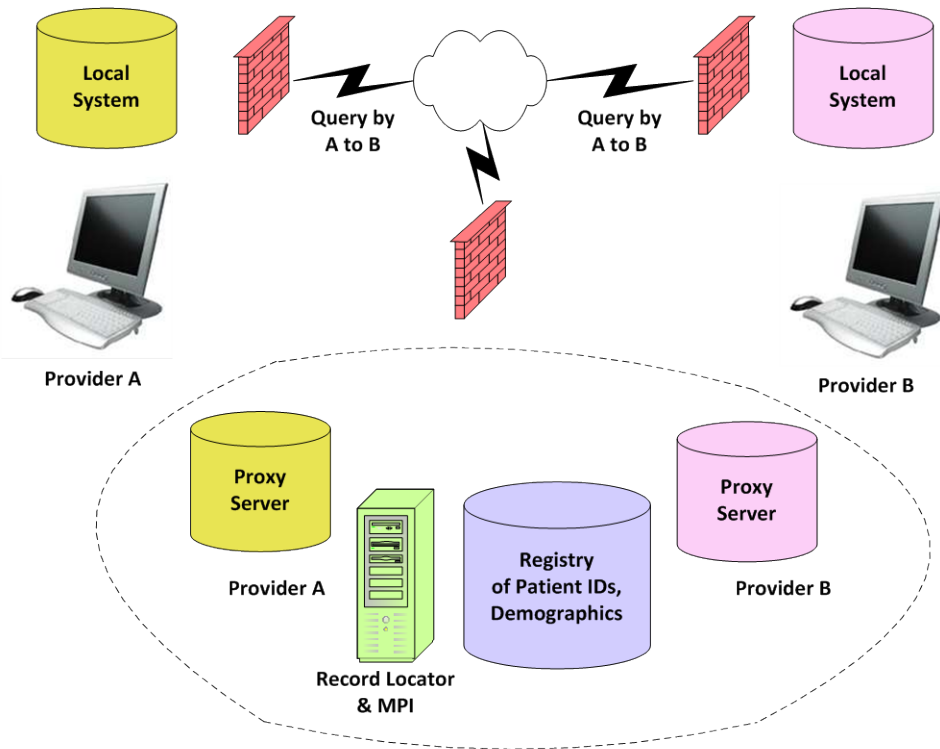
In a well-managed system, there can be no batch requests for data that are suspiciously large. If Provider A requested records on 1000 patients, the HIO should boot him off and begin an investigation. This is a “no-poaching” protection. A provider cannot use the HIO to select valuable patients of another provider and solicit them for his/her practice.

Federated Model: Data at Each Provider Location	
Pros	Cons
<ul style="list-style-type: none"> • This approach keeps data in edge servers (which duplicate data that is sharable) at each provider's data center. • To nervous providers, this appears to be the most secure. 	<ul style="list-style-type: none"> • All queries are done "just-in-time" so a disturbance on a network line can prevent some data from being transmitted. • The data are no more secure than in other models. • Each query still has to go through the MPI and the RLS at the time of execution. • Problems with matching that must be resolved manually must be handled at the time of the query.

The federated model seems to have it all. Data stays "at home" and is still available. Consider this. I am a provider in an area with active exchange. There are 400 providers connected (a small number for a town). I request data on John Smith. His data is at 40 locations and is extensive as he has many health problems (like 20% of patients). When I ask for his data, there is a momentary disturbance on two data lines. I get data from 38 locations but data from one of the locations not sent was crucial. I treat the patient and he suffers a complication or dies. Going across a community network to retrieve data "just-in-time" is a bad model. To fix this, there is a second model.

G2. Federated Model with Central Data Storage

In this federated model, the data from the computers at each provider location are replicated on "proxy servers" at the central site either where the HIO is located or at a hosting center. The data on each proxy server is controlled by the provider supplying the data either by physically controlling it or by specifying policies to control the data. For practical purposes, the data is as secure as if it was at the provider's location, but, when a permitted query for data is made by another provider, all the data is in one data center. This works much better.

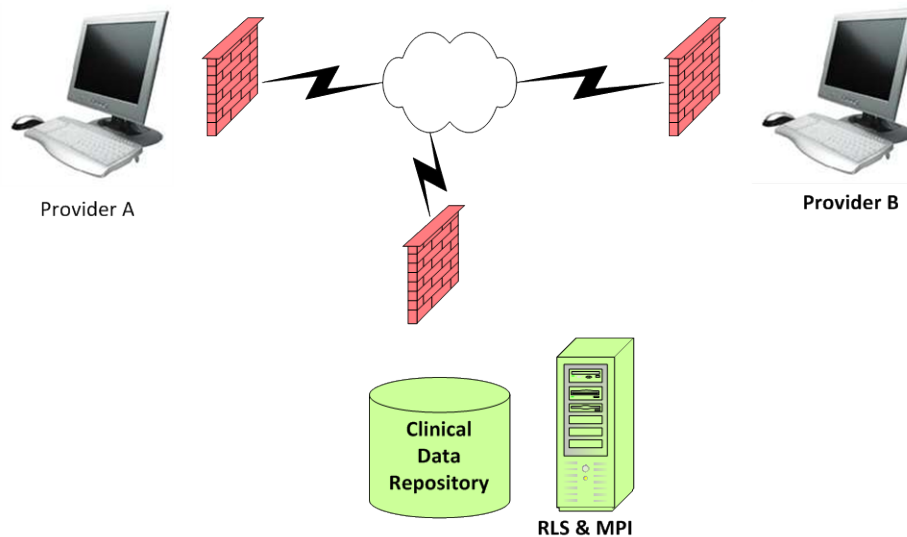


Many people call this a “hybrid” model.

Federated Model: Data at Central Location	
Pros	Cons
<ul style="list-style-type: none"> • This approach keeps data in proxy servers (which duplicate data that is sharable) at the HIO (central) data center. • Providers control what data is sharable by either physical control of the proxy server or by data sharing policies. • Queries for data go across all the proxy servers as if it were one server (and it may be sections of single server) and are fast. 	<ul style="list-style-type: none"> • To the uninitiated, the data are “elsewhere,” not in the provider’s data center and this seems less secure. • Each query still has to go through the MPI and the RLS at the time of execution. • Problems with matching that must be resolved manually must be handled at the time of the query.

G3. Repository Model

There is a third model, about which there is some irrational fear. That is the “repository” model. In this model, conceptually, all the data from all providers is located in one massive database. When Provider A queries for data on John Smith, s/he gets all the data from one file on one physical server.



This is very efficient but is only accepted if the providers trust the HIO to use data only for permitted uses. In fact, this is the most efficient model.

Repository Model	
Pros	Cons
<ul style="list-style-type: none"> All the data from all providers are on a single server, organized by patient All the matching and record locator functions are run when data are added to the clinical data repository (CDR), not at the time of a query Any problems with matching or data are resolved as the CDR is built, not when it is used Data are as secure in a CDR as in the other models so long as the HIO is well-administered Because of the ease of use of the CDR, this is a good model for clinical studies across the community, disease management and other public health purposes 	<ul style="list-style-type: none"> All the community data are on one system so those who worry about “owning their data” may be nervous

G4. Reality

If you ask a manager of an HIO what model they use, s/he will normally say “federated.” If you ask how they store lab data, most will say, “in a repository.” Why? First, no one has a federated model as described in the first diagram with “just-in-time” data collection over a large network. It is too risky. They answered “federated” meaning the second federated model, often called “hybrid.” They store lab data in a repository because it is the practical solution. Patients with multiple and chronic diseases have many lab tests and some of them are panels of tests. No one wants a system to search hundreds of times for files across a number of databases and then repeat the process the following month. Another definition of hybrid is a combination of the second definition of federated with a repository for test results, usually laboratory. Most people mean “federated with central proxy servers” when they say

“hybrid” (the second model above) but pay attention. They may mean “federated with central proxy servers and a repository for frequently-used, high-volume test results.”

G5. Summary

To be vividly clear, the key factor about security of provider data in any of the three models of data exchange is how well privacy and security protections are maintained, not which model you select. The nation’s best HIE attorneys say, “Don’t get the idea that this model is safe and that one is risky. Get the idea that you need to conscientiously set up your systems and privacy and security safeguards and manage them. Then your data will be very secure.”

Appendix H – Workplan/Schedule

This is the full-size version of the workplan in [Section 9.3](#).

#	Activity	Duration	2012									2013		
			Apr	May	Jun	Jly	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Summary Business Plan	15 days												
2	Assess Community Support	60 days												
3	Complete Dues Pricing Plan	5 days												
4	Arrange Incubator	45 days												
5	Incorporation (interim governance structure)	15 days												
6	Establish Account	10 days												
7	Define Desired Services	30 days												
8	Detailed Operational Business Plan	30 days												
9	Seek Seed Funding (small grant sources)	90 days												
10	Develop Governance Structure	90 days												
11	Edit Participation Agmt, DURSA, etc.	90 days												
12	Develop and Issue RFP (criteria & vendors/h	45 days												
13	Select HIE or Vendor	90 days												
14	Obtain Provider Commitments	180 days												
15	Execute HIE or Vendor Agreement	60 days												
16	Vendor/HIE Implements Infrastructure	90 days												
17	Go-Live with Initial Providers	120 days												
18	Post-Implementation Assessment	90 days												
19	First Expansion	120 days												
20	Second Expansion	Ongoing												
21	Seek Grants Opportunistically	Ongoing												
#	Activity	Duration	2013									2014		
			Apr	May	Jun	Jly	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
22	Vendor/HIE Implements Infrastructure	90 days												
23	Go-Live with Initial Providers	120 days												
24	Post Implmentation Assessment	90 days												
25	First Expansion	120 days												
26	Second Expansion	Ongoing												
27	Seek Grants Opportunistically	Ongoing												

Appendix I – Budget Examples

What's in this Appendix?

I.1 **Large Community HIO Budget.** This HIO is now operational.

I.2 **Metropolitan HIO.** This is not yet operational.

I.1 First Budget Example: Large Community

This HIO is operational.

Administrative Costs	2013	2014	2015	Total
Personnel	\$ 280,000	\$ 450,000	\$ 460,000	\$ 1,190,000
Benefits (26%)	72,800	117,000	119,600	309,400
Travel	40,000	70,000	75,000	185,000
Equipment	22,000	12,000	12,000	46,000
Supplies	8,000	8,000	8,000	24,000
Contractual				-
Rent	9,000	12,000	12,000	33,000
Other	4,000	5,000	5,500	14,500
Subtotal	\$ 435,800	\$ 674,000	\$ 692,100	\$ 1,801,900
Cost of Sales				
Subcontracts	\$ 450,000	\$ 500,000	\$ 550,000	\$ 1,500,000
Direct Labor				-
License Fees	900,000	900,000	900,000	2,700,000
Community Support Contribution				-
Direct Equipment				-
Subcontractor/Materials MPI	550,000	650,000	650,000	1,850,000
Other Direct Expenses				-
Implementation Fees	600,000			600,000
Subtotal	\$ 2,500,000	\$ 2,050,000	\$ 2,100,000	\$ 6,650,000
Total	\$ 2,935,800	\$ 2,724,000	\$ 2,792,100	\$ 8,451,900

Source: Will not be revealed. Dates and some data altered to prevent source determination.

I.2 Metropolitan Area

This HIO is in planning.

Administrative Costs	2013	2014	2015	Total
Personnel	\$ 320,000	\$ 660,000	\$ 660,000	\$ 1,640,000
Benefits (16%)	51,200	105,600	105,600	262,400
Equipment	25,000	10,000	10,000	45,000
Supplies	5,000	5,000	5,000	15,000
Contractual/Legal	50,000	30,000	20,000	100,000
Rent	9,000	12,000	12,000	33,000
Contingencies & Other	80,000	60,000	50,000	190,000
Subtotal	\$ 540,200	\$ 882,600	\$ 862,600	\$ 2,285,400
Cost of Sales				-
Subcontracts				-
Direct Labor				-
License Fees	\$ 390,000	\$ 700,000	\$ 700,000	\$ 1,790,000
Community Support Contribution				-
Direct Equipment				-
Subcontract/Materials MPI				-
Other Direct Expenses				-
Implementation Fees	150,000	460,000	150,000	760,000
Subtotal	\$ 540,000	\$ 1,160,000	\$ 850,000	\$ 2,550,000
Total	\$ 1,080,200	\$ 2,042,600	\$ 1,712,600	\$ 4,835,400

Source: Will not be revealed. Dates and some data altered to prevent source determination.

Appendix J – Partial RFP/RFI

What's in this appendix?

This is a section of a sample RFI/RFP. It does not fully
Comply with the recommendations in Sections 13.3 and 13.4.

Unnamed Health Data Exchange RFP for HIE Services Issued September 1, 2012

Overview

The Unnamed Health Data Exchange (hereafter “Exchange”) is issuing this Request for Proposal (RFP) to determine health information HIO (HIE) services that may be appropriate for:

- Medical groups
- IPAs,
- Private practices, and
- Hospitals and medical centers

in the Unnamed service area of Some Part of California.

The responding vendor/health information organization (hereafter “vendor”) should have a stable, capable product as evidenced by a number of implementations in a large-scale HIE setting. This RFP provides an overview of the operating environment, infrastructure, and system requirements identified by the Exchange. In addition, it presents proposal submission information and specific requirements for the vendor’s response.

About the Exchange

The Exchange is a project of

The Exchange is continuing to organize participation in the service area and anticipates being ready to proceed with a contractual relationship within the timeframe for response to this RFP and negotiation with successful vendor.

Any questions about this solicitation or other requests for data in connection with this procurement must be directed solely to Sam Jones, at 707-555-1212, or sjones@Exchange.bigURL.

Confidentiality of the Information Disclosed and Nondisclosure

Confidentiality. This solicitation contains confidential and proprietary information. Any release of information in this RFP to a third party without prior consent from the Exchange will result in rejection of the vendor’s proposal.

All material received relative to this RFP will be kept confidential until such time an award is made. If any part of a proposal is to remain confidential thereafter, the bidder must clearly identify that information on each page.

Nondisclosure. The vendor shall not disclose to anyone, other than the vendor's employees, officers, and other authorized parties directly connected to responding to this solicitation, any information concerning or found within this solicitation. No news release, public announcement, or any other reference to this solicitation or any program there under shall be made without express, written consent from the Exchange.

Other Provisions

- Response to this RFP does not commit the Exchange to paying any costs incurred in the preparation of bids. All costs associated with responding to this RFP are to be borne by the vendor.
- The Exchange reserves the right to not take action with respect to any vendor's response.
- News releases pertaining to this RFP and the award of any contract will not be made without prior approval of the Exchange.

Evaluation Criteria

The criteria used to select the preferred vendor are at the sole discretion of the Exchange. Vendor proposals will be evaluated using the criteria listed below. Responses will be evaluated based on the best fit of the proposed services to the needs of the Exchange.

- *Quality of Response* – The completeness and overall quality of the vendor's proposal, including submission of appropriate and reasonable responses to all RFP requirements.
- *Vendor Stability* – The demonstrated financial stability of the vendor's organization.
- *Vendor Experience* – The proven ability of the vendor to deliver, implement, and support the proposed system and services in similar healthcare environments.
- *Software Capabilities and Stability* – The demonstrated ability of the proposed applications to meet the requirements of the Exchange providers.
- *Support* – A demonstrated track record in supporting and enhancing services of the type sought in an effective and timely manner.
- *Future Product Releases and Enhancements* – The vendor's strategic initiatives, products in development, and planned enhancements, as well as associated costs and rollout dates.
- *Architecture* – The ability of the proposed architecture to support the proposed applications and provide suitable response times, as well as scalability/flexibility to accommodate future growth.
- *Interface Capabilities* – The ability to interface effectively with existing and planned Exchange provider and community information systems using established interface standards and tools.
- *System Cost* – The initial and ongoing costs associated with the proposed applications, hardware, implementation, customization, interfaces, conversion, and support services.

The principal goal of this procurement is to develop an ongoing relationship with a provider of HIE services to work with the providers in the service area to achieve the various stages of meaningful use and to grow the providers into a permanent interrelated system of healthcare that will become a significant participant in Health Reform. The breadth of these ambitions can not currently be quantified as many elements of the relationships involved in Health Reform are yet to be determined by regulatory processes and because Stages 3 and beyond of meaningful

use are not yet defined. Consequently this RFP simply addresses achievement of Stages 1 and 2 of meaningful use plus other current desires of the Exchange participants.

It is the Exchange's intent to select an HIE services partner organization within the next 90 days. If you are a finalist, we will wish to meet with your management team in person, have an on-site demonstration and meet with three of your clients within this period.

1.0 Specific Goals of this Procurement

Goal 1. Achieve meaningful use. Provide HIE services such that providers with a certified electronic health record (EHR) can attain credit for all Stage 1 meaningful use criteria.

Please provide a matrix similar to that following indicating each service you provide for your more mature clients by name with contact information and the month and year when the client with the service noted became operational. The example below shows only six clients but the attached Excel spreadsheet provides for 10 clients. Please report for 10 clients.

RFP Services Matrix						
Vendor Name:						
<i>Note: Each entry in this table is to be the date that the service in the row became operational for the named client.</i>	Client 1	Client 2	Client 3	Client 4	Client 5	Client 6
	Name	Name	Name	Name	Name	Name
	Contact	Contact	Contact	Contact	Contact	Contact
	Telephone	Telephone	Telephone	Telephone	Telephone	Telephone
	eMail	eMail	eMail	eMail	eMail	eMail
Service*						
Core services (MPI, RLS, etc.)						
Laboratory results delivery						
Laboratory orders						
Radiology results delivery						
Radiology orders						
Transcriptions						
Clinical summary document						
Medications management (ePrescribing for professionals, medication reconciliation for hospitals)						
Discharge summary						
ADT data (if hospital)						
Disease registries						
Immunization reporting						
Reportable lab results for public health						
Syndromic surveillance						
Population health reporting						
Referrals and authorizations (not required but please indicate if offered)						

Authentication (2-factor preferred)						
<i>*Please list the services your organization provides. The services listed are to provide an example of the approach sought.</i>						

Goal 2. Preferred architecture. The Exchange prefers a repository or hybrid federated architecture with all data files in a single highly secure colocation center with each provider's data files under that provider's control either by physical management or participation agreement. Please describe your architecture simply in narrative and a simple diagram.

Goal 3. Data supply to physicians without EHRs. Data should be organized in a way that it can be supplied to solo providers who may not have an EHR but need to have visual access to the data.

Goal 4. Notification. The patient's medical home should be notified when external encounters occur, e.g., emergency department visit or patient is hospitalized.

2.0 Content of Proposal

Please prepare your proposal in 11-point font. Please be responsive to the questions. Your proposal should contain the following sections and topics. Page limits are indicated in parentheses.

1. Executive Summary (1 page)
2. Background and Understanding of the Need (2 pages)
3. Responses to Technical Questions (see section 3.0 of the RFP) (10 pages)
4. Proposed Approach and Schedule (12 pages)
5. Management Plan, Staffing and Workload (8 pages)
6. Qualifications of Organization and Bid Staff (4 pages)
7. Pricing (4 pages)
8. Attachments: staff resumes, experience matrix, standard contract (no page limit)

The following is guidance for several sections:

- **Proposed Approach and Schedule.** In this section please describe specifically how your organization proposes to work with the Exchange. This should indicate the steps your organization will take to determine the detailed needs of each participating provider organization in the Exchange and to bring them up on your systems. A number of technical questions are provided in section 3 of this RFP. Please address these in this section of your proposal.
- **Management Plan, Staffing and Workload.** In this section, indicate by name and background the dedicated management team you propose for the project and the amount of time the bid staff will provide to each of the activities indicated in the schedule (table or Gantt chart) presented in the prior proposal section. The workload matrix should show the person hours or person days of each staff person by name and title allocated to each activity.

- **Qualification of Organization and Bid Staff**
 1. Describe your organization's mission, governance, products and services, and target clientele.
 2. Provide a short history of your organization (a paragraph or two).
 3. Describe the expertise of your organization in HIE.
 4. Assure that you have completed the matrix referenced on page 2 of this RFP and the attached Excel spreadsheet. This is a key portion of your proposal.
 - a. What is the total number of clients of your organization to whom you provide HIE services?
 - b. What is the geographic area within which you currently provide services?
 5. Describe the organizational structure of your company, the number of employees in FTEs, the number of contractors, and other resources that might support our implementation, e.g., a sister organization or subcontractor.
 6. Please provide the last three years audited financial statements demonstrating financial stability and reasonable reserves.
 7. Provide a resume for each individual bid in this project.
- **Pricing and Business Relationship**
 1. Clearly indicate your pricing at two levels: 80% of the providers (hospitals and medical groups) indicated in the first paragraph of this RFP and 50% of the providers indicated. Attached is an Excel spreadsheet listing the participating provider systems and the EHRs used by each – both ambulatory and hospital. For the 50% option, assume half the providers and beds do not participate.
 2. Describe how you anticipate your pricing will respond to Stage 2 and Stage 3 meaningful use requirements. Are you willing to commit to pricing or a process for pricing determination for Stage 2 and Stage 3?
 3. Please provide a standard or draft agreement including a provision that the source code will be available in escrow in the event of you organization's insolvency or bankruptcy and that our data will be immediately available.
 4. Please describe your service level commitments.
 5. Your contract will need to state that your proposal is an integral part of the agreement. All presentations in person or product discussions will be recorded and included as attachments to the agreement.

3.0 Technology Questions

Please respond to the following questions. Be concise but cover your capability that exactly answers the question. Answer questions in BRIEF narrative form. Answer in table if space is adequate.

Function	Do Now	Do by Date	Not Planned
1. With what EHRs (hospital and practice) do you currently interface? Please indicate one client using each EHR.			
2.			

Note: The above matrix has 31 sections with an average of 5 subsections each. Despite this detail, responses were not useful as those who write proposals apparently are nontechnical or they respond with what they think is desired.

Please submit your complete proposal electronically as a pdf by Soon 12, 2012, to proposals@bigURL.

Thank you.

Attachments:

1. Participating Organizations matrix of systems
2. Bidder client experience matrix form

Index

A

Additional Services.....	25
Adventist Health	13
Agreement with Incubating Entity.....	71

B

Basic Exchange Services.....	24, 25
Board Selection.....	18
Board Size	17
Board Succession	18
Budget	2, 30, 33, 34, 53, 83
Business Plan	2, 30, 57

C

California Health eQuality Program (CHeQ).....	28, 47
California HealthCare Foundation	11, 47
California Office of Health Information Integrity.....	43
Charging for Services	46, 47
Charter	59
clinical data repository.....	13, 21, 80
Communicate.....	6, 8, 75
community exchange.....	5, 13, 31
Community Meetings	6, 7, 8
Conclusions	57
Confidentiality of Medical Information Act (CMIA)	42, 43
Configuring Interfaces.....	55
CONNECT	22, 24, 76
ConnectHealthcare	59, 60, 61, 62
Coordinating Committee	6, 7, 8, 12, 15, 16
Core Services.....	24
Current Exchange.....	12
Current Systems.....	12

D

Dartmouth Atlas	10, 11
Data Exchange Models.....	77
Demographic/Environmental Scan	1
Demographics	63, 67
Demonstrations	52
Department of Defense	13, 22, 76
departments of health and social service	11
Developmental Funds	47
Dignity Health	5, 13
Direct	19, 22, 23, 24, 27, 28, 47, 76
DURSA	2, 35, 37, 58

E

ED visits	11
eHealth Exchange.....	2, 19, 22, 23, 24, 30, 35, 37, 60, 76
EHR/HIE Interoperability Workgroup	29
enterprise exchange.....	13
Entity Options.....	15
Environmental Scan.....	10
Epic.....	13

F

Federated Model.....	20, 21, 77, 78, 79
Final Budget	53
Financial Policy and Procedure	73
Form for Hospital System Data	63
Form for Medical Practice Data.....	67
Forming a Corporation	17
For-Profit	16
Funding	58
Funding Approach	2, 46

G

Governance	1, 15, 17, 35, 57, 61, 62, 71
Grant orientation	30

H

Health Information Exchange in California.....	5
Healthway	2, 13, 19, 22, 23, 27, 35, 76
HIE Charges	34
HIE Portals.....	27
HIE Ready	28
HIMSS Analytics EMR Adoption Model	31
HIO . 2, 3, 4, 13, 33, 35, 36, 48, 49, 50, 51, 52, 53, 55, 56, 83	
HIPAA	2, 40, 41, 42, 43
HIPAA Privacy Rule	40, 41, 45
HIPAA Security Rule.....	41
Administrative Safeguards	41
Physical Safeguards	41
Technical Safeguards.....	42
HITECH Changes to HIPAA.....	42
Holdouts.....	6, 9
hospitals . 9, 10, 11, 25, 31, 32, 47, 49, 55, 66, 67, 70, 87, 89	

I

Implement Exchange.....	55
-------------------------	----

Implementation	25, 38, 47, 58, 75
Implementation costs	47
Implementing Exchange	3
independent laboratories	12
Institute for Population Health Improvement.....	ii, 28
Integration Engine	19, 20, 64, 68, 75
Interface costs	47
interface engine	20, 34, 75
Involve Leaders	7

J

John Mattison	13, 27
---------------------	--------

K

Kaiser Permanente	5, 13, 23, 27, 30, 76
-------------------------	-----------------------

L

LabCorp	12
Laboratory Ordering	26
Laboratory Results	24, 25, 26, 38, 43, 64, 65, 68, 69
Line of Business	15
Lyman Dennis.....	ii, 75

M

Mark Elson	13
Markle Connecting for Health Model Contract.....	36
Markle Model Privacy Policies	38
Master Patient Index	19, 24, 74
Medi-Cal.....	11, 74
Medicare.....	10, 11
Meetings with Leaders.....	7
Memorandum of Understanding	61
Models of Data Exchange	20
Modular Model Participants Agreement	35

N

Narrowing the Field	50
Negotiate Agreement	49, 52
No-consent	44
Not-for-Profit	16, 17
Notice of Privacy Practices.....	38, 40, 45
NwHIN.....	2, 13, 22, 30, 35, 37, 60, 64, 68, 76

O

Opt-In.....	44
Opt-Out.....	44

Organization ..	1, 7, 12, 15, 33, 36, 46, 60, 61, 63, 67, 88, 89
Other California Laws	43

P

Partial RFP/RFI.....	85
Participant Agreement	3
Participant Agreements.....	54
Participation Agreement	2, 35, 58, 61, 62
Partner Investments.....	47
Patient Safety	32, 40, 42
Per transaction	47
Planned Systems	12
Policies & Procedures	39
Policies and Procedures	35, 36, 37, 38, 58
Preemption Analysis of State Privacy Laws	43
Preliminary Budget.....	33
Privacy and Security	2, 35, 37, 40, 42, 58
Privacy Rights Clearinghouse.....	44
Privacy Standard.....	40, 44
Probable Savings	31

Q

Quest	12
-------------	----

R

Rand Corporation	11
Record Locator Service	19, 20, 24, 38, 75
Redwood MedNet	13, 23, 39, 76
reference laboratories.....	12
referral patterns	10, 11
Relationships	10, 12
Relationships Among Provider Organizations	12
Repository Model	21, 79, 80
Responses to RFP	52
RFI	49, 50, 51, 85
Rhode Island Quality Institute	23, 38, 39, 76

S

sample RFI/RFP.....	51
Seed Funding	46
Select Pilots	55
Separate Corporation	15
Services cost	47
Site Visits	52
Small Grants	46
specialty laboratories	12
St. Joseph Health System	13

Stakeholder Engagement	1, 6, 57
State Privacy and Security Requirements	42
Subscription	48
Summary of Exchange	19
Sustainability	30
Systems for Exchange	2

T

Technical Summary of Exchange	2, 74
Technology Horizon	24, 28
translator	20, 34, 75

U

Us first	30
-----------------------	----

User Interfaces	24, 26
-----------------------	--------

V

Value-Added Services	25
Vendor	29, 49, 55, 64, 68, 86, 87
Vendor Partner	2, 47, 49, 58
Veterans Administration	13, 22, 60, 76
Vision	6

W

Workflow	24, 25, 26
Workplan/Schedule	30, 32, 33, 82